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ABSTRACT

"Kerala's Pioneering Experiment in Massive Vasectomy Camps," the principal article in this monthly publication of the Population Council, is a detailed research report on the success of a massive vasectomy camp conducted at Cochin, the capital city of the Ernakulam District of Kerala State, India. The second article, "The Gujarat State Massive Vasectomy Campaign," presents the results of a decentralized (multiple camps) approach vs. the single camp approach to voluntary sterilization. "Egypt Studies a New Plan of Action" describes Egypt's efforts toward creating conditions that will bring the target population to adopt small family norms--the main thrust of this approach being to offer women employment as an alternative to childbearing. The fourth article, "Status and Prospects of Natural Family Planning," reviews a conference on natural family planning, at which time scientists explored and evaluated contemporary methods of natural family planning, analyzed its scientific basis, its assets, liabilities, and effectiveness, and considered what new research should be carried out. "The Kaoshiung Study," the last article, describes a study conducted between 1966 and 1968 to increase IUD acceptance by active use of mass media and to introduce the pill and determine its effect on IUD acceptances. (LK)

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Kerala's Pioneering Experiment in Massive Vasectomy Camps

by S. KRISHNAKUMAR

In Ernakulam District of Kerala State, India, a massive vasectomy camp was conducted at Cochin, the capital city of the district, from 20 November to 20 December 1970. This camp was organized under the leadership of the district collector and the District Family Planning Bureau with the assistance of other departments of government, the local civic leadership, and voluntary agencies throughout the district. At this camp 15,005 vasectomies were performed, setting an all-India record. Encouraged by the success of the first camp, the collector and the family planning bureau organized a second one-month long sterilization camp in July 1971 in the same city. At this camp, or "Family Planning Festival," 62,913 vasectomies and 505 tubectomies were performed, exceeding by more than four times the all-India sterilization record set by the same district only seven months earlier. These massive sterilization camps have been hailed as a tremendous breakthrough in India's family planning effort.

Mr. Krishnakumar, I.A.S., is the district collector of Ernakulam District, Kerala State.

The Ernakulam camps set a world record in vasectomies performed for a given population group in a given length of time. Of the 78,423 acceptors sterilized in the two camps, 34,481 were residents of Ernakulam District, and they constituted 11.5 percent of the 300,000 couples eligible for family planning in the district. Coupling the achievements of the camps with prior program performance an estimated 29 percent of Ernakulam District's eligible couples are currently protected by a family planning method. This includes 38.1 percent of couples in the district with three or more children who have now been provided permanent contraceptive protection.

In spite of the short duration of the motivational effort and the massive nature of the camps, the distribution of acceptors by age of husband, age of wife, parity, income, educational status, religious composition, and rural and urban residence is roughly the same as in the normal program of the district, the state, and the country. Also in spite of the higher incentives given to the acceptors and promoters of sterilization at the camps—four to five times the normal—the total cost per birth prevented has been roughly the same as for the normal program.

The camps demonstrate that large masses of people can be motivated to accept sterilization in a short span of time by an organized and concentrated effort. They provide a spectacular example of a family planning program transcending the traditional health and family planning network to become a total community effort.

Background

ERNAKULAM DISTRICT

Ernakulam, one of ten districts in the state of Kerala, forms the geographic, commercial, and industrial center of the state. The headquarters of the district is Cochin City, Kerala's only major all-weather port and the fifth largest port in India. The district has a total population of 2.38 million (1971 census)—11 percent of the state's population and 0.4 percent of the Indian population. It has a population density of 727 persons per square kilometer.

The literacy rate of 65.3 percent in Ernakulam is higher than the literacy rates of Kerala State (60.2 percent) and India (29.3 percent). Compared with 16.3 percent in Kerala State and 19.9 percent in India, 27.6 percent of the district's population resides in urban areas. Ernakulam

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has 985 females per 1,000 males compared with 1,019 in Kerala, and 932 in the country. Ernakulam District's decennial population growth of 27.36 percent during 1961–1971 was greater than the comparable figures of 25.89 percent in Kerala and 24.66 percent in India. There are an estimated 300,000 currently married couples with wives in the reproductive age groups in Ernakulam District, including couples who have already accepted contraceptive services through the family planning program.

Origin of the Experiment

A District Development Seminar was organized at Cochin in August 1970 to devise an overall strategy for the future development of Ernakulam District and to lay the blueprint of a District Development Master Plan containing a multipronged development program. In the overall development strategy, limitation of population growth was given the highest priority. The district therefore set itself the ambitious target of bringing its entire 300,000 eligible couples into the program within five years. This was to be achieved through a program involving the active participation of the entire community.

To focus public attention on the population issue and to provide a rallying point for a popular movement, massive family planning camps, organized as festivals, were visualized at the first step in the district's intensive drive. Sterilization was to be popularized at these camps in order to create immediate and substantial demographic impact. Vasectomy was chosen because the operation is easy to perform at low cost and requires little time and no hospitalization; thus, it was deemed best suited for the massive camp approach.

The following description of the planning, the field work, and the organization of the camps refers for the most part to the December camp but also applies to the July camp which was run along the same lines with only minor modifications, as indicated in passing.

The Planning Stage

After the decision reached at the August 1970 seminar, the district collector issued an appeal through the press to the public stressing the importance of family planning and explaining the intensive program. The collector wrote personal letters to all persons and organizations in the district who could be expected to contribute by way of funds, gifts, manpower, motivated cases, and so on. Recipients of letters included panchayat presidents, trade union leaders, prominent businessmen, chambers of commerce, leaders of women's organizations, newspaper editors, artists and writers, village libraries, block development officers, medical institutions, revenue personnel, and officers of all government departments.

Under the collector's personal direction, 501 committees at the panchayat, block, municipal, and district levels were set up to undertake promotion and field work in each administrative area of the district. Each committee was responsible for promoting the targeted number of persons to the camp from its jurisdiction. Subcommittees were formed for publicity, service, transport, and so on.

The district collector delineated responsibility for managing the various facets of the festival and the supporting promotional drive in an elaborate circular order, which brought all the related governmental agencies into the campaign and achieved effective interagency coordination. The role of leadership assumed by the collector was instrumental in ensuring that the officials and nonofficials worked as a single team.

Scheduling of Areas

The collector set a target of 15,000 sterilizations for each camp. Individual targets were set for each panchayat, municipality, and corporation based on the population of these geographic areas. Each day of the month-long main camp at Cochin and the week-long subcamp at Thodupuzha—a town in an outlying area—was allotted to two or three panchayats or an equivalent area of municipalities or of Cochin Corporation. This technique enabled pinpointed concentration of the full resources of the drive in a limited area on the day before the appointed day at the camp for that area. It also facilitated the gathering of groups of people in each panchayat at a manageable number of points on the allotted days and transporting them to the camp and back the same day after the operation. This prevented confusion and enabled orderly running of the camp. Any person from any area could participate in the camp on any day he wished, but the general scheduling helped to ensure participation of at least a minimum number of people every day at the camp. Acceptors from outside the district did not have any fixed schedule.

Field Campaign

The District Family Planning Bureau, under the guidance of the collector, organized publicity and field work. Intensive publicity and educational activities began two weeks before the camp, building momentum up to the time the camp opened. The publicity at the block level was through public meetings, attended by 2,000 to 3,000 people and through group talks for audiences of less than 100 persons. Frequent press releases were issued at the district level appealing for popular participation in the program. All-India Radio Stations in Kerala cooperated with frequent announcements. In rural areas, street corner meetings, loudspeaker announcements, wall posters, bit notices, banners, slides at all local theatres, variety entertainments, and cultural performances on family planning publicized the festival at Cochin. The field publicity units, the health education units, and the film units of the District Family Planning Bureau concentrated on the camps.

Lists of eligible couples with their addresses, data on age of husband and wife and the number of children were prepared for each local area by the family planning workers. Couples in the reproductive age group with two or more living children were eligible for sterilization. House-to-house campaigns and squad work by teams of family planning educators and public workers were organized in each panchayat.

In addition to the intensive and concentrated field work in each major area of the district, special pockets were selected for intensive promotional effort on the basis of economic backwardness, inaccessibility due to terrain, or population density. These special pockets included housing colonies, slum areas, estate labor settlements, large office and industrial establishments, and special enclaves like the naval base at Cochin. Teams of family planning educators, physicians, and public officers covered these selected pockets with house-to-house campaigns. Industrial establishments promoted the program and sent their workers to the festival. Some of these establishments gave their own separate incentives to their workers and staff for participation in the camp.

The progress of field work in each panchayat and block area in terms of the number of persons who had registered with the committees was critically reviewed by the district collector for the two weeks preceding the camp, through a system of progress reports. Wherever the field work was considered deficient, organizational changes were made. The weak links in the campaign were strengthened by personal visits by the district level

organizers who took suitable corrective and follow-up action. The field work and publicity, reminiscent of a high powered election campaign, reached a crescendo two days before the opening of the camp.

At this time the publicity units in the field were grouped together and thereafter were sent each day to the group of panchayats (three panchayats or an equivalent area of municipalities or the corporation) for which the operations at the camp for the subsequent day were scheduled. In the 24 hours preceding the scheduled day the entire propaganda machinery in the district was concentrated in the particular localized area so that no eligible couple could miss the message of family planning. The house-to-house campaign and squad work were raised to maximum intensity. In addition large public meetings were arranged on this preoperation day in each panchayat, presided over by local leaders and, wherever possible, by the members of the legislative assembly from the area. Persons who had already undergone vasectomies were encouraged to speak. The next morning the motivated acceptors were dispatched from these panchayats to the camp, and then the publicity machinery and the army of personnel moved on to the next group of villages from which persons were to be promoted for the subsequent day.

Camp Organization

Lay-out and Arrangements

The camp was held at Cochin's town hall, a large auditorium with an extensive compound. The entire compound was covered with rain-proof coverings and the front of the premises was adorned with an architectural facade. The festival premises were attractively decorated and illuminated. Inside the auditorium 50 white painted hardboard cubicles with operation tables and accessories were set up. Arrangements were made at the festival site for reception of the acceptors, registration, medical checkup, preoperative preparation, laboratory examination, operation theaters with cubicles and medication sections. Also provided were free coffee stalls and free canteens, counters for issue of incentive money, distribution of condoms, research and study sections, and an entertainment auditorium where variety shows were performed 24 hours a day. The layout was designed to ensure a smooth flow of acceptors through the various medical and nonmedical sections in an uninterrupted and orderly manner without confusion or inconvenience to either staff or acceptors. An average of 2,000 acceptors could be served every day in the July camp with the figure rising to 3,000 on certain days.

Control Room

The district family planning medical officer presided over a control room that was the focal point of the organization and conduct of the camp. The sections for vehicle control, enquiry, complaints, registration for infertility and recanalization, and general office work and a typists' pool were located in the control room. The control room maintained continuous liaison with similar control rooms established at each block development office in the field. This arrangement facilitated supervision and coordination and ensured that unexpected developments could be dealt with quickly.

Staff Deployment

About 100 medical officers and adequate numbers of nurses, nursing assistants, ministerial staff, pharmacists, drivers, attendants, and others were stationed at the camp during the drive. A minimum required number of medical staff worked at the camp each day, depending on the number of registrants for the day. Medical officers and nurses in various hospitals in the district and in neighboring districts were prepared to work at the camp on short notice if a large number of unanticipated patients appeared. Thus, maximum economy in staff costs and minimum dislocation in the normal working of the hospitals were achieved. The total staff working at the July 1971 festival site numbered 981, with the following breakdown: health services department, 719; other departments of government, 214; staff of local self government bodies, 14; members of social service organizations, 34.

Special Services

The second camp was designed to provide all family planning services, including vasectomy, tubectomy, IUD insertions, and condoms. At an infertility clinic conducted concurrently with the family planning festival, 400 couples registered and were interviewed, investigated, medically examined, and advised by a team of medical and technical experts. Recanalization operations (anastomosis of the cut ends of the vas for reviving ability to reproduce) were also provided as part of the services for the benefit of earlier acceptors of sterilization who now wanted babies. Although 117 persons registered at this center during the camp, only a handful of operations could be performed at the district hospital during the festival period. The remaining applicants were offered this service at specialized institutions in the ensuing months.

A subcamp was organized at Thodupuzha, 50 kilometers from Cochin, for the convenience of acceptors from the district's eastern hilly areas. The subcamp performed 1,056 vasectomies in the first festival and 2,540 in the second. A minicamp at Cochin's naval base as well as mobile camps making use of the mobile surgical units of the District Family Planning Bureau were also organized concurrently with the festival. Tubectomies were performed in major hospitals of the district. Facilities for IUD insertions were arranged concurrently through the public health centers, the hospitals, and other medical institutions. Condoms were distributed to eligible couples with fewer than two children in the rural areas.

Statistical Analysis and Research Studies

A statistical cell for ongoing analysis functioned at the camp site. Research teams from the Rural Institution of Health and Family Planning, Gandhigram and the University of Kerala, and an observation team specially deputed by the government of India observed and conducted research studies while the festival was in progress.

Records of activities in the field and at the festival site were kept for future analysis. The festivals also had a built-in mechanism for research and concurrent performance evaluation. Studies in this regard were undertaken during each festival under the auspices of the Government of India and by the University of Kerala and other agencies. The Ernakulam project has thus been an action-cum-research program incorporating the three-pronged approach of the family planning program symbolized by the red triangle—motivation, service, and research.

Exhibits, Contests, and Official Visits

An audiovisual exhibition on family planning was organized at the festival premises to coincide with each one-month-long camp. Public functions occurred at the inauguration and conclusion of the festival and also at intervals when the camps were in progress. Baby shows were organized at the camps to project the image of family planning with special reference to maternal and child health and to focus public attention on prenatal, natal, and postnatal pediatric services.

Only the babies of parents adopting permanent methods of contraception were allowed to participate in these contests. The festival was visited by cabinet ministers and other dignitaries from the government of India, the chief minister and ministers of the state government, and eminent economists and representatives of national and international organizations concerned with the family planning program.

Incentives

Large incentives played an important role in motivating many acceptors, especially from the lower income strata. Incentives to acceptors of vasectomy or tubectomy in the July camp were as follows:

Incentive	*Male*	*Female*
	Rs.	*Rs.*
Compensation amount as per usual central government rate	21.00	29.00
Special Government of India grant	14.10	14.10
Payment by local self government body such as Corporation of Cochin, municipalities and panchayats	10.00	10.00
One week's free ration for the family of the individual (specially sanctioned by the state government)	14.00	14.00
CARE gift kit containing 3 kgs. of rice, one saree and one dhothi (Contribution of CARE)	40.00	40.00
Value of lottery ticket (Prize money divided by the number of acceptors—*Government of India funds)	0.40	0.40
Free food at the camp site (met from special Government of India grant)	1.50	1.50
Total	101.00	109.00
Transport and other services		
Free transport to and from the camp (average in terms of bus fare)	6.00	6.00
Medicines in connection with the operation	7.00	20.00
Total	13.00	26.00
Grand total in cash, kind, and services	114.00	135.00

Promoters received, in addition to the usual rate of Rs. 2 sanctioned by the government, Rs. 8 from CARE, making a total of Rs. 10 for each promoter.

Suitable incentives for the project staff and field workers in the form of monetary and other awards were announced by the district collector before the beginning of the drive. They included special merit certificates from the government for officials and nonofficials performing outstanding service in connection with this intensive drive; special monetary awards for field workers for maximum promotional effort; and awards to institutions and panchayats sending the maximum number of persons to the camp. In each category of officials and nonofficials connected with the organization and conduct of the camp the best persons in terms of meritorious services rendered were recognized and rewarded. The project staff other than those compensated by government as per rules on a per operation basis (doctors, nurses, and so on) were given a daily project allowance as a token compensation for the arduous nature of their work.

Quality Control

The quality of those sterilized at the camp was kept at a high level by concentrating the motivational effort on the eligible couples during the promotional drive and by screening at the camp site. All persons who came to the camp were registered in booths set apart for each local area at the camp site. Only those registered persons who were interviewed, screened, and passed as physically eligible for sterilization at the preoperative clinic at the camp, manned by medical officers and paramedical staff, were allowed to undergo the operation.

Technical Supervision

A week before the start of the festival all the concerned medical officers in the district were called in conference to settle technical arrangements for the camp as well as follow-up arrangements. Surgeons from the medical colleges and major hospitals of the state worked in turn at the operation theater at the camp to supervise the operations.

Acceptor Cards

Each acceptor had to file a signed declaration form expressing his or her willingness to undergo sterilization. The specially designed forms contained the following additional data relating to the acceptor and his spouse: full address, name, house number, panchayat, block/municipality/corporation/district, and residence, age, religion, education, monthly income, occupation, number of children born by sex, number of children living by sex, and age of the last child born. They also contained the name, full address, occupation, and signature of the motivator. Although the accuracy of the entries could not be systematically checked, random checks were made of the cases known to the field workers in the district. These random checks revealed a very high degree of accuracy of the contents, mainly because the acceptor had nothing to gain by distorting the facts. A careful medical examination ensured elimination of persons unsuitable because of age or physical condition. The acceptor cards formed the basis of the demographic and socioeconomic evaluations of the experiment.

Follow-up Arrangements

Immediately after the operation, the sterilized person was given injections and antibiotics for use for one week and a three-months supply of condoms. He was also given a printed leaflet containing instructions for postoperative care for three months, including cleanliness of the operated and surrounding area, compulsory use of the condom for three months, and semen examination after three months. These instructions were read and explained to acceptors by the family planning staff at the camp site after the operation. Acceptors were driven back to their door steps so they would not have to walk long distances. Acceptors from other districts were taken to the bus terminal or the railway station. Those employed in government, commercial, and industrial concerns were given special leave with pay for six days of rest. Other acceptors were advised to rest for a few days and do only light work for ten days following the operation.

Follow-up on acceptors from Ernakulam District was arranged in two parts: first institutional follow-up through hospitals, public health centers and subcenters, and second, follow-up by field workers making home visits. Follow-up by medical teams occurred on the third day after the scheduled day for operations at the camp for each area. The teams camped at the local public health center after giving advance publicity. Acceptors were to be contacted and their welfare enquired into by the local committee

*A total of Rs. 26,200 was distributed to 101 prize winners of the lottery conducted for acceptors of sterilization at the festival. The first prize was Rs. 10,000 and the other prizes were: 3 prizes of Rs. 1000 each, 5 prizes of Rs. 500 each, 10 prizes of Rs. 250 each and 82 prizes of Rs. 100 each.

members including the family planning staff within three days of the operation and once again within seven days. They were then to be seen by the committee members once a week for one month and thereafter once a month for two years. After three months the acceptors were encouraged to get their semen microscopically examined in the nearest health institution and special arrangements were made for that purpose. Whenever any complication was detected or reported, immediate first aid was to be given according to the nature of the complication and hospitalization was to be resorted to wherever necessary. The medical officers and family planning field staff were to visit the nonhospitalized cases at their residences and render free medical assistance. In case of hospitalization, the patients were to receive special attention from the medical and nursing staff to effect speedy recovery, and the details of the cases were to be reported to the district family planning officer to ensure continued follow-up of the patient after discharge. An identity card issued to each acceptor of sterilization at the festival entitled him to immediate attention and prompt medical treatment in all the health service institutions in the state. Proper follow-up and after-care of the acceptors was the main concern of the family planning department in the months following the festivals.

Camp Atmosphere

The camps succeeded in large measure in overcoming the resistance of the individual to vasectomy arising from embarrassment, fear of others knowing about the operation, and prudery regarding a subject relating to sex and reproduction. It was with the aim of breaking down this barrier that the town hall at the very center of the city was selected as the location for the camps, and they were organized in the full public gaze. The image of family planning as a clinical program was radically altered by the festive atmosphere of the camps. The town hall resembled more than anything else a center of popular activities.

During the month-long festivals the gaily decorated premises were alive with a constant flux of people arriving from the various parts of the district and state; long queues; doctors, nurses, and officials busily going about their jobs; the public address system filling the air with directions and messages; government and private requisitioned vehicles clogging traffic around the camp site; and the huge crowds viewing the entertainment programs. Decorations, banners, exhibitions, the permanent theater for music, puppet shows, films, dance dramas, programs by the state's leading literary figures, and other cultural entertainments twenty-four hours a day, processions, decorated floats, baby shows with prizes for healthy babies of sterilized parents, the lottery, and the attractive gifts combined to create the aura of the traditional Indian festival—a successful medium for any campaign strategy.

An illuminated signboard on the front facade of the festival building prominently displayed up-to-date figures of the total number of operations performed at the camp, and the score was a focus of interest to every person passing the festival site. Highlights of the camp and the daily number of sterilizations performed were also given extensive publicity through newspapers, local stations of the All-India Radio, loudspeaker announcements, and notices.

Throughout the district, family planning vehicles could be seen with their loads of acceptors going to and from the camp. Acceptors returning to other districts with the colorful CARE bags of incentives were a constant sight in the state bus and train services.

As significant as the atmosphere in overcoming individual fears and resistance was the high degree of group activity at the camps. Eligible couples were motivated in groups; acceptors collected in a group at the local panchayat office and were transported together to the festival site; they were encouraged to participate in mass demonstrations in support of the program; and they were transported back to their particular rural areas in groups. This group participation provided a psychological sense of security and support to each individual, allayed his fears, and reinforced his convictions. It took the focus off what, to the individual if he were alone, would loom large as a serious surgical interference with his reproductive physiology. The presence of friends and acquaintances reinforced the individual's sense that what he was doing was socially acceptable.

Finally, the camps succeeded in overcoming the apprehensions of prospective acceptors resulting from wrong notions and fears of loss of potency and health surrounding the operation, by effective technical advice and information.

TABLE 1. **Acceptors by method and by district, for the two camps**

Item	*Number*
December 1970 camp	
Ernakulam District	14,663
Other Kerala Districts	342
Total (vasectomies)	15,005
July 1971 camp	
Ernakulam District	
Vasectomies	19,302
Tubectomy and postpartum sterilization	516
Total (sterilizations)	19,818
Other districts (vasectomies)	
Trichur	12,363
Kottayam	11,585
Alleppey	10,743
Quilon	4,908
Trivandrum	2,196
Malappuram	717
Kozhikode	424
Palghat	412
Cannannore	247
outside the state	5
Total (vasectomies)	43,600
Total (sterilizations)	63,418

Acceptors*

The numbers of acceptors by origin and by method of sterilization are shown in Table 1. The performance of the November-December Ernakulam camp (15,005 vasectomies) was 1.4 times the previous maximum annual achievement in the district of 10,662 sterilizations in 1968–1969. The performance of the July 1971 camp (63,418 sterilizations) was 5.9 times the maximum annual achievement.

Prior to the Ernakulam camps the maximum number of sterilizations in any single month in any district in India was 3,000 and the second Ernakulam camp achieved 21 times this record. The 59,367 vasectomies conducted at a single location at the Ernakulam town hall in the second camp (the remaining 4,051 sterilizations were performed in subcamps and mobile camps) is the maximum number performed at any single camp site to date. The 2,834 vasectomies conducted at Ernakulam town hall on 26 July 1971 is the maximum number of sterilizations con-

* Data quoted in this section and the various analyses are obtained from the Demographic Research Center, Bureau of Economics and Statistics, Kerala State; District Family Planning Bureau, Ernakulam; a study of characteristics of Ernakulam camp acceptors by the National Institute of Family Planning (CFPI) New Delhi; and "The Ernakulam Camps: An Analysis and Implications for Family Planning in India" by Miss Veena Soni, Ford Foundation, New Delhi.

TABLE 2. **Demographic characteristics of vasectomy acceptors for the two camps**

Item	*Kerala State program*	*Ernakulam district program*	*First Camp November–December 1970*	*Second Camp July 1971*
Mean age	38.1	38.0	38.9	37.4
Mean age of wife	33.7	31.5	32.2	30.8
Average number of living children	4.2	4.0	4.2	4.1

TABLE 3. **Distribution of sterilized males by religion**

	Total population[a]		*Sterilized males*							
			Kerala State		*Ernakulam District*		*Ernakulam November–December 1970*		*Ernakulam July 1971*	
Religion	*Kerala State (percent)*	*Ernakulam District (percent)*	*Percentage*	*Acceptance factor*	*Percentage*	*Acceptance factor*	*Percentage*	*Acceptance factor*	*Percentage*	*Acceptance factor*
Hindu	60.7	46.2	74.3	1.22	59.6	1.29	53.0	1.10	68.1	1.12
Christian	21.5	42.9	18.2	0.85	35.6	0.83	38.9	0.91	26.4	1.23
Muslim	17.8	10.9	7.5	0.42	4.7	0.43	8.1	0.74	5.5	0.30
	100.0	100.0	100.0	—	100.0	—	100.0	—	100.0	—

[a] 1961 census

Note: *Acceptance factor* is defined as the ratio of the proportion of sterilized persons in each religious group to the proportion of that religious group in the target population. Thus for Kerala, column 4 is column 3 divided by column 1. In the first camp the target population is treated as that of Ernakulam District while in the second it is treated as that of Kerala since more than two-thirds of the acceptors in the second camp came from the other districts of Kerala.

ducted on any single day at any camp or in any district in India.

The 63,418 sterilizations performed at the second camp in one month was equivalent to 95.5 percent of the entire performance of Kerala State during the previous year, 1970–1971.

Target Achievement

Kerala State achieved only 55.9 percent of its sterilization target for 1970–1971, and the comparable figure for all India was 46.0 percent. Of all the Indian states, Orissa had the best performance relative to targets in 1970–1971 (82.6 percent). But Ernakulam District exceeded its target of 13,485 for the year by 55 percent mainly by virtue of the first massive camp. The camp alone exceeded the annual target by 8.4 percent. The performance of Ernakulam's July 1971 camp is equivalent to 609 percent of the annual target of 10,407 sterilizations for Ernakulam District for 1971–1972. Kerala State's target for 1971–1972 was 88,048 sterilizations. As a result of the 63,418 sterilizations performed in the July 1971 camp Ernakulam District achieved at one stroke 72 percent of Kerala State's sterilization target for 1971–1972. Vis-a-vis the targets set by the collector for the camps themselves the first camp just reached its target of 15,000 sterilizations while the second camp exceeded its target of 20,000 (15,000 from Ernakulam District and 5,000 from outside the District) by 217 percent.

Characteristics of Acceptors

In Table 2, the important demographic characteristics of the camp acceptors are compared with those of acceptors in the normal program. The demographic quality of acceptors at the camps as measured by the characteristics of Table 2 is at least equal to or slightly better than in the ongoing district and state programs.

The breakdown of acceptors by the three major religious groups in Kerala—Hindu, Christian, and, Muslim—is shown in Table 3. The figures reveal that the festivals succeeded in involving all the major religious groups in large numbers and in satisfactory proportions with reference to their presence in the base population. Of the three major religious denominations Muslims, however, have tended to be underrepresented.

The income of camp acceptors was slightly above and educational status slightly below that of sterilization acceptors under the regular district program. But both income and educational status were higher than the average for Kerala State. The camp acceptors represented urban areas and rural areas of the district in equal proportion. The vast majority (75 percent) of the camp acceptors were agricultural laborers, cultivators, and small farmers, whereas these groups constituted only 60 percent of the acceptors in the normal district program and 45 percent of the acceptors in the normal state program.

Share of Eligible Couples

Ernakulam District has a total population of 2.38 million (1971 census) and an estimated 300,000 couples eligible for family planning inclusive of those already provided with family planning services. Of the 78,423 persons sterilized in the two camps, 34,481 were residents of Ernakulam District. As a result of Ernakulam's intensive family planning drive, therefore, 11.5 percent of the total eligible couples in the district have been protected against future births. From the point of view of the state, the cumulative performance of both the Ernakulam camps of 78,423 sterilizations has provided permanent contraceptive protection to 2.5 percent of the state's 3.11 million eligible couples (including family planning program acceptors) or 4.6 percent of the 1.80 million couples who were eligible for sterilization (i.e., those with more than two children) in the state at the time of the first camp.

As a result of the total performance of the Indian family planning program since its inception twenty years ago, it is estimated that 11 percent of India's eligible couples are currently protected by one of three methods—sterilization, IUD, or conventional contraceptives. The comparable figure for Kerala State is 15 percent. The proportion of the district's couples protected by Ernakulam's two camps alone (11.5 percent) is equal to the proportion of protection provided by the total performance of the all India program thus far. Coupling the achievements of the camps with prior performance, a total of 29.0 percent of the district's eligible couples are currently protected by a family planning method.

The above estimates relate to the coverage at the camps of the total eligible couple population in the district and hence understate the penetration of the camps among couples eligible for the

terminal method of sterilization. Estimates of the latter appear in Table 4.

The two camps reached 22.5 percent of the couples in the district with two or more children, including 20.7 percent of couples with three or more children. The camps and the prior program combined reached 43.5 percent of all couples with two or more children and 38.1 percent of all couples with three or more children.

TABLE 4. **Distribution of Ernakulam's eligible couples and those sterilized by number of living children**

	Number of living children					
Eligible couples, Ernakulam	*0* *(a)*	*1* *(b)*	*2* *(c)*	*3 or more* *(d)*	*2 or more* *(e)*	*Total*
Total	53,500	37,300	41,200	168,000	209,200	300,000
Sterilized before the camps	Negligible	Negligible	9,951	36,769	46,720	46,720
Not sterilized before camps	53,500	37,300	31,269	131,231	152,480	253,280
Sterilized at the two camps	0	192	7,071	27,218	34,189	34,481
Total	Negligible	192	17,022	63,987	91,009	91,201
Cumulative protection afforded to total couples (percent)	0	0.5	41.4	38.1	43.5	30.4

TABLE 5. **Expenditure per acceptor (in rupees)**

	November–December camp	*July camp*	
	Vasectomy	*Vasectomy*	*Female sterilizations*
Benefits to acceptor			
in cash	31.00[a]	45.10	53.10
in kind	48.00	54.40	54.40
in services	7.00	14.50	27.50
Total	86.00	114.00	135.00
Incentives to promoter	5.00	10.00	10.00
Payments to project personnel	12.00	13.50	13.50
Camp arrangements, publicity and all other expenses	10.00	7.50	7.50
Total	113.00	145.00	166.00

[a] Rs. 7.28 = US$1.00

TABLE 6. **Budget by source of funds**

	November–December camp		*July camp*	
	Rs. (in millions)	*Percent*	*Rs. (in millions)*	*Percent*
Government of India	7.650	45	4.240	46.0
State government	1.950	12	0.888	9.6
Local body (Panchayat/ municipality/Cochin Corporation)	1.500	9	0.634	7.0
CARE	3.750	22	3.444	37.4
Contributions from private agencies and the public	2.100	12	—	—
	1.695	100	9.206	100

Birth Prevention and Demographic Impact

Using the birth prevention model of the Department of Family Planning, Government of India, adjusted for the age distribution of acceptors in the Ernakulam camps, it is estimated that each male sterilized at the first camp will prevent on the average 2.0 future live births and each male sterilized at the second camp will prevent 2.2 live births over the remaining reproductive life span of his wife. The sterilizations performed at both the camps will therefore avert a total of 170,798 future live births of which 73,353 can be attributed to residents of Ernakulam District. According to the demographic model used by the Department of Family Planning, the maximum fraction of birth preventions occurring in any individual year will be 10 percent in the third year after the date of the sterilization. This means 7,335 fewer births can be expected to occur in Ernakulam District in 1974 as a result of sterilizing 34,495 persons from within the district at the two camps. In earlier and later years the number of potential births averted will be lower. By these projections, the district's birth rate will be lower by 2.8 to 2.9 births per 1,000 population per year in 1974 than it would have been if the camps had not been held. Total performance of the national program thus far is estimated to have brought the birth rate down from its 1961 level of 41 to 38 in 1970. The potential impact of the camp performance on the district's birth rate therefore compares very favorably with the achievements of the national program.

Inputs and Expenditure

The costs incurred per sterilization and total costs per acceptor are given in Table 5. The total expenditure, calculated by multiplying the cost per acceptor by the number of acceptors, came to 1.695 million rupees for the first camp and 9.206 million rupees for the second camp. The breakdown of camp budgets by funding sources appears in Table 6.

More than 50 percent of the expenditure incurred at both camps was financed out of funds raised from sources other than the central government, the traditional supporter of the program. These sources included Kerala State government, CARE, panchayats, and public contributions.

Total cost per acceptor at the camps (Rs. 113 for the first camp, Rs. 145 for the second) was higher than the total cost per acceptor under the regular district program during the last three years (Rs. 104). But the camps and the regular district program were very similar in terms of total cost per birth prevented (Rs. 65), and when only governmental expenditure is considered, the camps were more cost

effective than the regular district program in terms of both the cost per acceptor and the cost per birth prevented. This is true although the total benefits including incentives to acceptors were Rs. 86 and Rs. 114 in the two camps respectively as against the normal payment of Rs. 21 in the regular program, and payments to promoters were Rs. 5 and Rs. 10 in the two camps as against Rs. 2 in the normal program. In both the camps more than 90 percent of the entire expenditure went as direct benefits to persons most deserving it—acceptors, motivators, and project personnel. All other overheads including publicity, field effort, transport, and camp arrangements combined were kept to less than 10 percent of the total expenditure.

Economic Benefits

Taking the conservative figure of Rs. 950 for the average discounted economic value of a birth averted by sterilization, the economic benefit of sterilizations performed at the two camps is estimated at Rs. 162 million. The ratio of economic benefits to total costs is identical for the camps and the regular district program (15 to 1). In terms of funds expended by the government only, the camps have a very much more favorable benefit-cost ratio (31 to 1) than the regular district program (15 to 1). Also the unprecedented number of sterilizations performed at the camps was equivalent to a six-fold increase in utilization of the program's service capacity over its previous maximum in the district. By boosting up the utilization of existing capacity the camps have greatly enhanced the economic return on investment in the family planning infrastructure.

Drawbacks and Deficiencies

A few drawbacks and deficiencies were noticed at the camp and in the follow-up stages of the program. The ceiling prescribed by the Government of India of 20 sterilizations per day per doctor could not be strictly enforced at the camps due to the heavy rush of acceptors and the difficulty in procuring more doctors on short notice. On days on which it was necessary to relax this rule, strict supervision ensured technical perfection in the operations performed. In spite of the careful selection, a few of the surgeons were found to be not sufficiently experienced and had to be withdrawn. Due to their large numbers, the acceptors had to stand in queues for long periods of time and this may have resulted in less than perfect preoperative cleanliness. Although the acceptors from within the district were returned to their doorsteps, those from outside the district had to travel by train and bus and thereafter walk some distance to their village homes. This may have increased the chances of postoperative complications. The proper follow-up and after-care of the large number of acceptors from other districts posed a serious problem for the Health Services Department. The follow-up services through personal visits could not be arranged for these acceptors from other districts and it rested on the acceptor or his motivators to contact the nearest health or family planning institution in the event of any complication. This however does not pose a difficult problem in Kerala because of its well developed health and family planning infrastructure, the accessibility and proximity of the health institutions in each rural area, and the educational level of the people.

In spite of the drawbacks, the complications among the 78,423 sterilizations conducted at the Ernakulam camps have been less than 2,500 or 3.2 percent, and these reported cases have been almost exclusively of a minor nature and easily cured. There has not been a single reported case of a major incurable complication or fatality following the sterilizations.

Although the second camp was designed as a total family planning festival, in fact only vasectomies were given concentrated attention. This was because the large numbers of acceptors for vasectomy claimed almost exclusively the time and attention of the entire organizational machinery. This focus on vasectomies and comparative nonattention to other methods, although a shortcoming with respect to the original design of the festival, was probably adequately compensated for by the fewer administrative and organizational complications as a result of dealing with only one main method. This enabled the program to achieve unqualified success in terms of demographic impact.

Most of these defects and deficiencies arose because of unexpectedly large numbers of acceptors and most were corrected quickly as the system adjusted to the extra load. In the organization of future camps, the strain on the system will be minimized by providing at the planning stage a greater proportion of reserve capacity in trained staff, vehicles, and other resources.

Effects on National Program

The Ernakulam program represents one of the most significant landmarks in the recent history of the Indian family planning program. Whatever its shortcomings, it has shown one way of appreciably increasing family planning acceptance rates. The experience of the two Ernakulam camps shows that a phenomenal response to the program can be evoked with the adoption of a sound strategy and appropriate and effective inputs. It also shows that the practice of contraception by a fair proportion of the country's eligible couples need not necessarily be dependent upon and await the much slower processes of economic development.

The Ernakulam program has provided a planning and organizational model that could be profitably emulated in other areas of the country. In the wake of our program, the government of India decided to organize, on an experimental basis, 25 vasectomy camps in different states. These camps are being held in selected districts of Uttar Pradesh, Maharashtra, Hariyana, Bihar, Tamilnadu, Andhra Pradesh, Madhya Pradesh, and Kerala States of India. The State of Gujarat organized camps in all its districts. The results of these massive vasectomy camps have been satisfactory to date. Whereas each district set a target of a minimum of 10,000 operations, these targets were invariably exceeded. In Tamilnadu, for instance, the achievement was 50,000 more than the expectation; in Gujarat, it was over 43,000 higher, and in Maharashtra over 30,000. By the end of February 1972, within six months after Ernakulam's July 1971 festival, 645,000 of vasectomies had been performed in these camps. The evaluation of these efforts has been entrusted to India's National Institute of Family Planning, and, on the basis of the institute's findings, the government of India proposes to assess the place of such massive camps in the national family planning program.

The Future District Program

In the future program of Ernakulam, the camp and the clinic approaches will be advantageously combined and the district will carry on its intensive program until it reaches the goal of acceptance of family planning by the entire target population. Special attention will be given to postpartum sterilization, vaginal tubectomy, the IUD, and the condom. The camp approach for vasectomy will be re-

introduced after an appropriate interval of time; meanwhile, the normal program based on the family planning clinics will continue at as high a tempo as possible. In the periods between massive camps the family planning machinery will be used for collecting and preparing up-to-date statistics of eligible couples with special reference to such characteristics as parity, income, and occupation.

The program is considering a multidimensional and reinforcing mixture of incentives designed for individuals, groups, and communities for participation in family planning. The vast numbers of acceptors of the two camps, together with the acceptors under the normal program may be organized into localized family planning clubs or associations for publicizing the program and educating and motivating acceptors. These associations can begin quite modestly as informal councils consisting of acceptors, representatives of concerned operating agencies, teachers, village officials, and participating citizens and can gradually acquire greater legitimization and authority as they demonstrate their usefulness. Selected acceptors can be trained as local representatives, assistants and workers with modest salaries and fees for individual cases of acceptance motivated by them.

An important facet of the further program development is the proposed establishment of a family planning hospital complex at Ernakulam. The proposed family planning hospital could provide up-to-date facilities for vasectomies, tubectomies and postpartum sterilization, IUD insertions, condom distribution, and all other family planning methods approved by government. The hospital could avoid some of the problems entailed in delivery of family planning services along with the normal health services at regular hospitals and health centers, such as the image of human suffering at regular hospitals, long waiting periods, a too widespread bureaucracy, the pressure of other business on already over-burdened staff, the necessity for the acceptor to acknowledge desire for family planning while standing amidst the heterogeneous clientele of the health center, and so on. In addition to family planning methods other aspects of family welfare such as facilities for infertility counseling, recanalization operations, abortions, and even marriage and genetic counselling and family life education could be built into this scheme. Such a family planning hospital would enable not only expanded services but also proper training of staff, better supervision, better fiscal arrangements, fewer bureaucratic controls, more studies and experimentation for feedback into the program and far better evaluation.

Conclusion

The development of national family planning programs is a truly historic innovation of recent times and its impact is still not fully measured. India was the first country to officially recognize the need for population limitation as an integral part of its development plans. The success of the national program in India is a crucial variant between prosperity and poverty, nonhunger and hunger, progress and stagnation, stability and instability, and fulfillment and nonfulfillment of this nation's rightful destiny. The task of bringing the country's birth rate to the desired level is enormous and complex and it is not likely that one contraceptive method or one managerial technique will serve a population as vast and diverse as that of India. But the Ernakulam experiment goes to show that with a combination of dedicated and dynamic leadership at all levels, improvement in service, efficient functioning of staff, effective supervision and guidance to workers, intensive propaganda and educational effort, prompt attention in cases of complaints, active involvement of nonofficials and the community at large, concurrent appraisal and better feedback arrangements, appropriate inputs, and above all imaginative planning, organization and management, it is possible to motivate large masses of people to accept family planning in a very short span of time. The pioneering effort at Ernakulam has now been duplicated quite successfully in various parts of the country. These successes reinforce our faith that through determined effort it will still be possible to spread family planning in India within the next crucial decade. Meanwhile the family planning workers of Ernakulam have, with humility and renewed conviction, dedicated themselves to the full, continuous and informed implementation of this vital national program.

Further References

1. Very detailed reports on both the Ernakulam Family Planning camps along with background information on demographic and socioeconomic characteristics of Ernakulam District and Kerala State are available in the book "*The Story of the Ernakulam Experiment in Family Planning*" written by Mr. S. Krishnakumar and published by the Government of Kerala. This illustrated publication priced at Rs. 20 can be obtained from the "Financial Assistant to the District Collector, Ernakulam, Cochin, Kerala State, India" on payment of price of the book plus forwarding charges.

2. The analysis of the data on the first and second Ernakulam Camps presented in the above publication as well as in this paper was undertaken by the Ernakulam District Family Planning Bureau and Miss Veena Soni, a research officer of the Ford Foundation closely associated with the Ernakulam Experiment. More detailed analysis of the demographic impact of the camps, the characteristics of acceptors and the camp's implications for the national programme are presented in the report by Miss Soni entitled "*The Ernakulam Camps: An Analysis and Implications for Family Planning in India.*" This report is available from the Ford Foundation, New Delhi.

Glossary

district collector—also called deputy commissioner or district magistrate, the administrative head and the chief governmental officer in a district in India. India's 21 states consist in all of 330 districts. This functionary is the collector of revenues, the executive magistrate in charge of the police force, and the chief officer responsible for the economic development of the district. He coordinates and has overall supervisory control over all government activities in the district. This post is held by members of the Indian Administrative Service.

panchayat—the smallest unit of local self-government in India. Ernakulam district has 101 panchayats with an average population of 20,000 each and an average area of 26 square kilometers.

community development block—a number of panchayats grouped together for the purposes of developmental administration. Ernakulam district's 101 panchayats are grouped into 17 community development blocks.

municipality—a town with a population of above 50,000, of which Ernakulam District has four.

corporation—a city with a population of more than 300,000. Cochin City, the capital of Ernakulam District, is the only corporation in this district.

one rupee—13.33 US cents or 5.56 British new pence.

nirodh—the Indian name for condoms or prophylactics.

The Gujarat State Massive Vasectomy Campaign

by V. H. THAKOR *and* VINOD M. PATEL

In Gujarat State, India, 221,933 vasectomies were performed during an eight-week campaign. More than 1,000 vasectomy camps were held throughout the state. The decentralized approach had several advantages over the single camp approach: a wide coverage in terms of area and population was achieved; follow-up of acceptors was facilitated; and savings in expenditures on transportation were realized. Finally, the existence of multiple camps avoided the overcrowding and the heavy workload for doctors that could occur at a single camp. This report describes the Gujarat campaign and discusses its achievements.

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A state-wide massive vasectomy campaign offering higher than normal Government of India approved incentives was launched in Gujarat State on 15 November 1971 with an initial target of 150,000 vasectomy operations. Originally scheduled to run through 31 December 1971, the campaign was extended to 15 January 1972 because of spontaneous public response and continued sustained general demand for vasectomies. A total of 221,933 vasectomies was performed during the campaign, exceeding by 3.5 times the record set by Kerala State only six months earlier and thus setting a new world record in male sterilizations.

Although data collected during the campaign are now being compiled and analyzed by the State Family Planning Bureau and a complete report with detailed tabulations on acceptor characteristics and demographic impact may not be available for another two to three months, a preliminary report may be useful in explaining some of the underlying assumptions and significant factors responsible for the success of this unique state-wide campaign. Toward this aim, our report begins with a discussion of the organization of the campaign, showing the main differences between the centralized Ernakulam District program and the decentralized state-wide Gujarat program. Key factors in the overall success of the campaign were the higher incentives, active involvement of panchayats, and the role of the chief secretary and other senior state officials. Detailed planning and the intensive education, motivation, and mass publicity work undertaken by the State Family Planning Bureau also greatly contributed to the success. The final section of the report deals with program implications, conclusions, and recommendations for further action.

Background

In September 1971 the Gujarat State Family Planning Bureau decided to hold a state-wide massive sterilization campaign, following the spectacular success of the Kerala program and our own limited experience in two districts. However, whereas in the Kerala program the resources—both men and material—were concentrated in one district, Ernakulam, the Government of Gujarat adopted a decentralized approach in the hope that the latter method would pay higher dividends. The Ernakulam camp was organized as a district-wide program with a single main camp functioning at the district headquarters. Because of higher incentives and state-wide publicity, however, over two-thirds of the acceptors came from outside the district. The Gujarat Government was concerned with the possible dangers of a single district camp. Besides creating problems of transportation, the single district camp approach might affect the quality of services provided at the camp since doctors performing vasectomy operations on a massive scale might be overworked. It might also increase problems in follow-up because acceptors coming from outside the district could not receive a high level of attention and might even be lost to follow-up when they returned to their districts.

In view of these real dangers and the local situation, it was decided to hold a statewide campaign with each district holding three to ten main camps at central locations and several mini camps in far-flung areas. A detailed plan of operation was prepared by the State Family Planning Bureau for organizing such a campaign, with the active involvement of the panchayat system. The plan was submitted to the Government of India in September for approval and for sanction of additional incentives. It was reviewed at the Central Family Planning Council meetings at Jaipur in October and formally approved by the Department of Family Planning, Government of India, shortly thereafter.

Camp Arrangements

The camps were highly decentralized. Generally, the main camps in each district functioned on a permanent basis throughout the campaign period. The mini camps, on the other hand, were organized at peripheral areas, principally in school and panchayat buildings, and they moved from one location to another according to a predetermined plan drawn up by the district family planning officer in consultation with local panchayats and other official and nonofficial agencies. The rotation of the mini camps largely obviated the need to transport acceptors across many villages to the main camps.

For both the main and mini camps, acceptors were picked up at central locations and were returned after the operation in official family planning and panchayat vehicles. However, many motivators brought their "clients" in buses and private vehicles. No payment to cover transportation charges was made to those who came to the camps on their own, and the result was considerable savings in transportation costs.

Each main and mini camp had separate counters for registration, payment, gifts, medications, and other functions. On-the-spot payments were made to the acceptors and motivators. Standardized printed record forms, and follow-up and identity cards were provided by the State Family Planning Bureau. The record form included the name, address, and age of the acceptor, age of wife, total live births, number of living children by sex and age, family income, educational status, and so on. The completed follow-up form was mailed to the primary health center near the acceptor's home. The local medical officer was required to make a home visit to the acceptor within 48 hours of the

TABLE 1. **Annual sterilizations in Gujarat State: 1966–1967 to 1971–1972.**

Fiscal year 1 April–31 March	*Vasectomy*		*Tubectomy*		
	Number	*Percent of total sterilizations*	*Number*	*Percent of total sterilizations*	*Total sterilizations*
1966–1967	17,535	44.1	22,241	55.9	39,776
1967–1968	38,790	45.6	46,247	54.4	85,037
1968–1969	50,823	50.5	49,734	49.5	100,557
1969–1970	49,232	52.2	45,076	47.8	94,308
1970–1971	44,105	46.7	50,433	53.3	94,538
1971–1972					
up to 15 January 1972:					
April–14 November	22,581	43.1	29,756	56.9	52,337
15 November–15 January	221,933	96.3	8,516	3.7	230,449

operation. The acceptor was then to be visited by the auxiliary nurse-midwife or the family planning field worker once a week for a month and once a month thereafter for one year. Before the actual incentive payment was made, an identity card was issued to each acceptor that entitled him to free treatment on a priority basis in any government medical institution in case of postoperative complications, and the acceptor was advised to have his semen examined at the primary health center three months after the date of operation.

Each main camp performed a daily average of 100–200 vasectomies and each mini camp 25–75. No arrangements were made for tubectomy operations or IUD insertions at the camp sites. Tubectomies were performed in approved hospitals as under the regular program, but acceptors did not receive the incentives offered for vasectomies.

Campaign Achievement—A World Record

Both the Ernakulam and the Gujarat campaigns are significant landmarks in the history of Indian family planning and in the world population movement. By performing 232,000 sterilizations in two months, Gujarat State has set a new world record in sterilizations, exceeding by 3.5 times the earlier record of 63,418 sterilizations performed in a month-long campaign in Ernakulam, Kerala State, in July 1971. This level of achievement is especially commendable in view of the restrictions imposed on effective campaign work by the recent war between India and Pakistan.

The 230,449 sterilizations performed during the campaign exceed the initial target by over 50 percent and are equivalent to 1.6 times the annual sterilization target assigned to Gujarat State for the year ending 31 March 1972. By comparison 52,300 sterilizations were performed in the state from April through October 1971 and 188,800 sterilizations during the previous two years, 1969–1971.

Table 1 shows comparative annual performance in sterilizations (both vasectomy and tubectomy) in Gujarat State during the last five years. Performance declined steadily after a peak of 100,557 sterilizations in 1968–1969 in the state. The campaign performance is more than twice this best annual record and exceeds the total performance during 1969–1971. Table 1 also shows that except in 1968–1969 and 1969–1970, annual tubectomy operations exceeded annual vasectomy operations in Gujarat State prior to the campaign. The campaign has dramatically altered this ratio in favor of vasectomies. This shift to vasectomies should in the long run bring sizable savings to the government since the cost per tubectomy is considerably higher than the cost per vasectomy under the regular program.

Gujarat has a total population of 26.67 million according to provisional estimates of the 1971 census of India. A total of 573,587 sterilizations were performed in the state from the inception of the program through 14 November 1971, giving a cumulative rate of 21.3 sterilizations per thousand population, without correcting for aging and other factors. The achievement of the present campaign is equivalent to 8.7 sterilizations per thousand population, raising the rate in the state to 30.0 per thousand population. On a national level, this campaign might help our state to move from its present sixth position in all-India sterilization performance rates to either the second or third place following Maharashtra.

Approximately 4.69 million couples in the reproductive age group (15–45) in Gujarat are eligible for family planning. An estimated 14.0 percent of these couples were protected by family planning methods before the launching of the massive campaign, with the share of each method being: sterilizations, 9.8 percent; IUDs, 1.1 percent; and conventional contraceptives, 3.1 percent. The sterilizations performed during the campaign have provided permanent contraceptive protection to an additional 5 percent of the state's eligible couples.

Vasectomy performance during the massive campaign shows considerable variation among the 19 districts in the state. Table 2 shows the state population by district, vasectomy targets assigned to each district for the massive campaign, actual performance, and the proportion of targets achieved. The targets were assigned on the basis of population, with no consideration of past performance. All but four districts not only achieved, but greatly exceeded their vasectomy targets. The actual performance in these four districts (Panchmahals, Jamnagar, Amreli, and Junagadh) was only slightly below their greatly elevated vasectomy targets. The variations in the percent of target achieved ranged from a minimum of 90.9 percent in Junagadh to a maximum of 504.0 percent in Dangs District. Many districts achieved three to four times their annual targets for 1971–1972, despite the emergency situation created by the Indo-Pakistan war.

Acceptor Characteristics

Characteristics of vasectomy acceptors in the Gujarat State campaign appear in Tables 3–5. A discussion of these characteristics in comparison with characteristics of vasectomy acceptors elsewhere appears in the box on page 191.

Factors in Success

Higher Incentives

The first and most important reason for the success of this massive campaign is the higher than usual incentives. There have been heated debates both in India and abroad on the appropriateness of incentives for family limitation. Much of the criticism against incentives stems from an inadequate or improper understanding not only of the role played by incentives,

TABLE 2. **Massive Vasectomy Campaign Achievement by District: 15 November–15 January 1972**

Category[a] and district	*Population 1971 census provisional (in thousands)*	*Target*	*Vasectomy rate per 1,000 population*	*Vasectomies performed up to 15 January 1972*	*Percent of target achieved*
A category					
Surat	1,311	7,241	16.6	21,717	299.9
Baroda	1,509	8,335	12.8	19,265	231.1
Bulsar	1,428	7,888	11.6	16,613	210.6
Kaira	2,443	13,494	7.9	18,298	143.0
Mehsana	2,091	11,550	8.4	17,483	151.4
Ahmedabad	1,317	7,274	8.0	10,574	145.4
Gandhinagar	201	1,110	7.7	1,544	139.1
Surendranagar	846	4,673	6.3	5,164	110.5
B category					
Broach	1,106	6,109	16.7	18,525	303.2
Rajkot	1,622	8,960	5.2	9,485	105.9
Bhavnagar	1,406	7,766	6.0	8,254	106.3
Panchmahals	1,843	10,197	5.4	9,995	98.0
Amreli	848	4,684	5.1	4,359	93.1
C category					
Dangs	94	519	27.8	2,616	504.0
Banaskantha	1,265	6,987	7.4	9,394	134.4
Kutch	850	4,695	6.2	5,275	112.4
Sabarkantha	1,187	6,556	5.7	6,749	102.9
Jamnagar	1,111	6,137	5.4	5,970	97.3
Junagadh	1,654	9,135	5.1	8,501	93.1
Municipal corporation					
Baroda	467	3,086	14.8	6,905	223.8
Surat	471	3,112	10.8	5,096	163.8
Ahmedabad	1,588	10,492	5.8	9,151	87.2
Total (vasectomies)	26,661	150,000	8.3	221,933	148.0

[a] Districts were classified into three categories on the basis of past sterilization performance, economic and educational status, availability of transport and communications, local resources, and so on.

but of the local situation as well. Unquestionably, the role of higher incentives at Ernakulam was significant. Experience in Gujarat only further demonstrates the importance of incentives in attracting volunteers for sterilization.

Cash incentives ranging from 65 to 75 rupees were given to acceptors during this massive vasectomy campaign. In addition to cash payment, payments in kind, such as a *dhoti* (male garment), plastic bucket, bag, and similar items were given at several camps. Payment in cash and kind varied among districts and among talukas in the same district, depending upon local contributions.

Cash incentives ranging from 10 to 20 rupees per vasectomy were given to motivators who brought clients for operation. The usual program incentive in Gujarat is 10 rupees for motivating each case of vasectomy. During the campaign, motivators were also awarded attractive prizes depending upon the number of cases they brought in. The value of these prizes increased with the number of cases motivated and varied from cash prizes to prizes in kind such as alarm clocks, lamps, watches, transistor radios, fans, sofas, and sewing machines.

Higher incentives need not necessarily increase the average cost of a vasectomy since the massive campaign approach introduces savings in other areas. The average cost per vasectomy operation during this campaign was certainly less than under the normal government program despite the higher incentives. Furthermore, the average cost per vasectomy in Gujarat may have been much less than the average cost in Ernakulam for the following reasons:

- Gujarat performance is 3.5 times higher.
- Transport expenditure was much less than in Ernakulam due to the decentralized approach.
- Incentives to the acceptors were lower than in Ernakulam.

Panchayat Participation

The panchayat system was introduced in Gujarat on 1 May 1963. The three-tier panchayat system consists in ascending order, of gram (village) panchayat, taluka (group of villages) panchayat, and district panchayat.

To increase people's participation in family planning, the family planning program was completely transferred to the panchayat administration by the Government of Gujarat in April 1969. Special efforts have been made to involve the panchayat as a "change agency" right from the planning stage of this campaign.

This involvement of the panchayats was a significant factor in the success of the campaign. The panchayats participated in the planning and implementation of the campaign and gave higher financial contributions than ever before in the history of the family planning program of Gujarat State. More than 2,000,000 rupees were contributed by the panchayats from their own funds during the two months of the campaign. They developed their own incentive plans for acceptors and motivators from their respective regions. They were actively involved in motivation, education, and organization of the camps. All district panchayats, taluka panchayats, and more than 1,200 gram panchayats of Gujarat actively participated in every stage of campaign work.

The Role of Officials

The role of L.R. Dalal, the chief secretary to the government of Gujarat, was another key factor in the program's success. His personal interest, guidance, and continuous efforts made possible involvement of the entire government and panchayat machinery at every stage of the campaign. His leadership did much to pass over bottlenecks at different phases of the campaign, and his keen interest in the planning, organization, and implementation stages solved numerous problems at the state and district levels.

During the campaign he convened several meetings of state and panchayat officials at state and district levels to stimulate active involvement and to increase output. In addition, he wrote several letters of encouragement to these officers at various stages of the campaign.

The secretary, Health and Panchayats of the Government of Gujarat, who has considerable experience working with panchayats as development commissioner, gave his guidance and help before and during the campaign. The development commissioner also evinced keen interest in the campaign and personally visited a number of camps to inspire both official and unofficial panchayat workers. Similarly the deputy secretary and the under secretary in charge of family planning gave vigorous assistance in solving various administrative problems and in issuing government orders at stipulated times as agreed in our proposals.

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Under the leadership of the director of Health Services, special efforts were made to popularize vasectomy. All district development officers, collectors, district superintendents of police, taluka development officers and mamlatdars and elected members of panchayats worked hard and exerted their influence on their subordinates. "Talaticum-secretaries" (revenue men at the village level) motivated large numbers of vasectomy acceptors by exercising their influence on rural couples. Other people in influential positions who did remarkable motivational work were teachers, public health workers, social workers, village level workers, and local leaders. In several districts, some motivators gave their incentives to the acceptors. In Baroda District, for example, one talati motivated 190 cases of vasectomies and distributed the entire incentive money (1,900 rupees) to his "clients."

TABLE 3. **Percent distribution of vasectomies performed during massive vasectomy campaign by age-group, by occupation, and by yearly income for three districts, Gujarat, 15 November 1971–15 January 1972.**

Item	*District*			*Three districts*
Age	*Ahmedabad*[a]	*Kaira*	*Gandhinagar*	
15–19	0.0	0.1	0.0	0.0
20–24	0.2	0.8	0.3	0.6
25–29	6.0	6.3	4.4	6.1
30–34	19.5	24.5	16.1	22.4
35–39	28.6	27.7	27.7	28.0
40–44	25.2	25.9	26.5	25.7
45–49	15.6	12.3	19.8	13.8
50–54	4.5	2.2	4.9	3.1
55 and older	0.4	0.2	0.3	0.3
Total				
Percent	100.0	100.0	100.0	100.0
Number	10,574	19,298	1,544	31,416
Cultivation and farming	26.6	44.6	62.6	39.4
Agricultural labor	46.4	33.9	21.6	37.5
Mining, quarrying, livestock, forestry, fishing, hunting	3.8	1.0	0.3	1.9
Cottage industry	4.7	4.0	1.1	4.1
Manufacturing	4.9	3.8	0.0	4.0
Construction	5.8	1.8	0.1	3.0
Trade and commerce	3.9	2.2	2.0	2.7
Transport, storage and communication	1.5	0.6	0.0	0.9
Other services (pl. specify)	2.0	6.0	9.1	4.8
No occupation	0.4	2.0	0.2	1.4
Not available	—	—	3.0	0.2
Total				
Percent	100.0	99.9	100.0	99.9
Number	10,574	19,298	1,544	31,416
Yearly income (rupees)				
Below 500	19.9	13.1	0.1	14.8
500–999	17.1	37.9	20.5	30.0
1,000–1,499	15.8	21.3	25.3	19.7
1,500–1,999	15.2	13.8	35.3	15.4
2,000–2,499	14.6	8.0	8.9	10.2
2,500–2,999	7.7	2.6	2.0	4.3
3,000–3,499	6.1	1.8	3.0	3.3
3,500–3,999	2.9	1.0	0.6	1.6
4,000–4,499	0.4	0.3	0.3	0.4
4,500 and above	0.3	0.2	1.0	0.2
Not available	—	—	3.0	0.1
All income groups				
Percent	100.0	100.0	100.0	100.0
Number	10,574	19,298	1,544	31,416

Note: Percentage with less than 20 vasectomies should not be used for comparison.
[a] Ahmedabad District excluding Ahmedabad Municipal corporation.

Advance Planning

Detailed advance planning was another factor in the success of this campaign. The planning passed through the following phases:

1. A workshop for district education and information officers was conducted by the state mass education media officer (family planning) on 30 and 31 August 1971 to prepare guidelines for performing 100,000 sterilizations (mostly vasectomies) during November 1971.

2. In the last week of September and the second week of October, two regional meetings of district officers of the Health and Medical Department were convened under the chairmanship of the chief secretary and health secretary, respectively. At each meeting different facets of the campaign were discussed and administrative decisions were made.

3. A state-level planning committee, formed under the chairmanship of the director, Health Services, Dr. V. H. Thakor, prepared "An Operational Plan for 150,000 sterilizations between 15 November and 31 December 1971 in Gujarat State."

4. The director of Health Services convened a meeting, on 30 October 1971, of all district health officers and district family planning medical officers. At this meeting decisions were made on decentralization of authority and raising and utilizing funds, and a detailed working plan for each district was discussed.

5. The operational plan was forwarded by the chief secretary, along with a letter from him to the district collectors, district development officers, and municipal commissioners. This action had great impact on the organization of the campaign in every district.

6. Repeated appeals and necessary instructions by the authorities at various levels were issued as proposed in the operational plan.

7. Three state-level committees, 133 district-level committees, about 200 block-level committees, and more than 12,000 village-level committees were formed for the efficient organization and management of vasectomy camps.

8. All government and panchayat vehicles were pooled by transport committees headed by deputy district development officers and kept ready for use by 10 November 1971, under the special orders issued by the chief secretary. The highly satisfactory transportation arrangements made by the district officials went a long way in assuring the success of the campaign.

9. Plans were made for payment of incentives on the spot.

10. Quality control was assured by screening of cases and follow-up.

TABLE 4. **Numbers of vasectomies performed during massive vasectomy campaign, age-group and number of living sons by number of living children for three districts, Gujarat.**

Item / *Age*	*Number of living children* 1	2	3	4	5	6	7	8+	*Total*	*Percent*
15–19	2	8	—	—	—	—	—	—	10	0.0
20–24	3	64	57	34	14	2	—	—	174	0.6
25–29	23	452	436	468	357	136	35	—	1,907	6.1
30–34	46	548	2,125	1,976	1,200	682	337	132	7,046	22.4
35–39	57	619	1,562	2,274	1,937	1,373	584	384	8,790	28.0
40–44	42	407	1,103	1,925	1,884	1,502	765	438	8,066	25.7
45–49	22	133	563	874	936	936	586	292	4,342	13.8
50–54	5	44	161	167	206	175	149	79	986	3.1
55 and older	2	5	21	15	26	16	5	5	95	0.3
Total										
Number	202	2,280	6,028	7,733	6,560	4,822	2,461	1,330	31,416	100.0
Percent	0.6	7.3	19.2	24.6	20.9	15.3	7.8	4.2	99.9	
Number of living sons										
0	22	27	18	16	6	2	1	—	92	0.3
1	180	1,128	1,065	761	524	294	134	80	4,166	13.3
2	—	1,125	3,435	3,210	1,976	1,273	446	170	11,635	37.0
3	—	—	1,510	2,521	2,522	1,450	706	251	8,960	28.5
4	—	—	—	1,225	1,406	1,174	624	320	4,749	15.1
5	—	—	—	—	126	454	399	298	1,277	4.1
6 and above	—	—	—	—	—	175	151	211	537	1.7
Total										
Number	202	2,280	6,028	7,333	6,560	4,822	2,461	1,330	31,416	100.0
Percent	0.6	7.3	19.2	24.6	20.9	15.3	7.8	4.2	99.9	

TABLE 5. **Numbers of vasectomies performed during massive vasectomy campaign by educational status of husband and wife for three districts, Gujarat.**

Educational status of sterilized husband	*Educational status of wife* Illiterate	Literate without schooling	Primary school	Middle school	High school	High school graduate and above	*Total*	*Percent*
Illiterate	19,522	500	294	34	—	—	20,350	64.8
Literate without schooling	1,944	336	89	13	—	—	2,382	7.6
Primary school	5,462	381	627	67	7	—	6,544	20.8
Middle school	554	154	259	162	3	—	1,132	3.6
High school	249	130	298	102	103	4	886	2.8
High school graduate and above	9	6	22	31	52	2	122	0.4
Total								
Number	27,740	1,507	1,589	409	165	6	31,416	
Percent	88.3	4.8	5.1	1.3	0.5	0.0	100.0	100.0

EDUCATION AND MOTIVATION

Intensive family planning education and motivation efforts were undertaken both before and during the campaign. The following are some of the important procedures in this area:

Eligible Couple Register—All rural and urban family welfare planning centers were asked to complete and revise the Eligible Couple Registers. To identify those eligible couples who could be most easily motivated to accept vasectomy, data on previous acceptors of vasectomies were analyzed and it was found out that men accepted vasectomy only after having one (or more) male child in the family. Hence workers were asked to prepare lists of eligible couples having at least one male child.

Orientation Training—Orientation training sessions of one to three days duration were held for auxiliary nurse-midwives, field workers, health visitors, and other public health staff. One-day orientation training meetings were conducted for the periphery staff of Community Development, Revenue, and Education Departments.

Meetings--Village, public health center, taluka (block), district, and state level meetings were convened to discuss with program workers the provisions of the operational plan that they had received.

Field work—Peripheral staff of all departments made special efforts to motivate acceptors from the eligible couple lists given to them. The administrative heads distributed targets of numbers of cases to be motivated by individual members of their departments, as they themselves had received targets from their immediate superiors. At the request of higher authorities, the immediate officers of the periphery staff gave priority to the motivational work.

Tom Tom and Prabhat Ferry—Tom Tom was used to advertise the campaign for the first time in urban areas. A person walking on long bamboo stilts and dressed like a joker attracted the groups on the street. He, along with four to five others, distributed leaflets and pamphlets regarding family planning. Prabhat Ferry (a procession moving around the village in early morning) was used in rural areas.

Scoreboard—To create healthy competition among districts and municipal cor-

porations, a scoreboard was published in the newspaper on several days. At Ahmedabad, the headquarters of the Directorate of Health Services, a large scoreboard was also placed at Apna Bazar cooperative department store to show the daily score of vasectomies performed.

Cultural programs—To create general awareness of family planning and support for the small-family norm, various cultural programs, including family planning dramas (a total of 98 performances), *bhavais*, or folk dramas (188), folk songs (155), puppet shows (57), and *Harikatha*, or stories from the Scriptures (122) were performed in low-response areas of each district and municipal corporation. Moreover, film shows on family planning were organized in selected pockets of population concentration and low-response areas of rural and urban communities. This kind of intensive family planning mass publicity was started by mobilizing all available audio-visual units and cultural troops from 10 October 1971.

Identity cards—Each acceptor at the vasectomy camps and service centers was issued an identity card, which entitled him to prompt medical treatment in all health and medical institutions run by the Health Department in the state.

Follow-up instruction cards—Each acceptor at each vasectomy camp and service center was given a follow-up instruction card. District officials were told that the instructions to be followed by vasectomized persons should be read out and explained to each of them by the family planning staff while the acceptors were resting after the operation.

Mass Publicity

Extensive use of such regular outlets as radio and newspapers combined with special slide shows and pamphlets to give the program wide and varied publicity. State and District Publicity Committees were formed as suggested in the operational plan and gave wide publicity to the campaign.

Radio. Maximum publicity was given through All India Radio at Ahmedabad, Baroda, Rajkot, and Bhuj. The news about the incentives, the performance by district and corporation, and salient features of the campaign were included in the daily news bulletins as well as in feature programs on such topics as industrial workers, rural couples, and women.

Newspaper advertisements and articles. Several innovative advertisements were prepared, pretested, and printed in the leading newspapers of Gujarat both before and during the campaign. The advertisements were of three types: (1) popularizing the campaign and incentives (total insertions, 43); (2) popularizing the vasectomy operation (26); (3) popularizing the small family norm (10). Many more family planning advertisements were inserted in local publications by the district panchayats. Additional special articles and press notes appeared in both major and local newspapers.

Slides. Three different slide shows on the following aspects of family planning were prepared and screened in more than 200 cinema theatres: "Why Vasectomy?" (250 slides); "Why A Small Family?" (250 slides); and "Participate in the Massive Vasectomy Campaign" (250 slides). The slides were screened in the theaters of the respective districts and corporations with the cooperation of the district collectors.

Exhibitions. Almost all the districts and corporations organized large-scale family

Acceptor Characteristics

In the following paragraphs the Gujarat data in Tables 3, 4, and 5 are compared to data from other Indian studies and studies in other areas of the world. Interpretations must be made with caution since variations in sampling and study design are great and there is often a significant understatement by respondents of age and number of living children.

The average age of males sterilized at Gujarat (mean: 38.3, median: 38.2) falls within the general range (late 30's, early 40's) typical of Indian acceptors to date *(1)*. The figure is, however, lower than that yielded by a survey (1968-1969) of nine Indian states (rural median: 40.3) *(2)*. It is comparable to that for South Korean vasectomy acceptors in a survey of all provinces except Seoul (mean: 38) *(3)*; slightly lower than the mean age of a sample of West Pakistan vasectomy records (mean: 41) *(4)* and lower than figures given in the Harriet Presser review for West Pakistan and East Pakistan, 1964-1969 *(1)*.

As has been typical of sterilized persons in India, acceptance at Gujarat came relatively late in terms of number of living children at acceptance as well as in terms of age. The mean number of living children of Gujarat acceptors was 4.6, the median 4.4. These figures are comparable to those reported by Presser for Gujarat in 1963, to Pakistan district data reviewed by Presser, to data reported by Dorothy Nortman for 1967-1968 (West Pakistan: 4.4; Bangladesh: 4.8)*(5)*, and to Korean figures reported by Lee (mean 4.7) and Kim, Ross and Worth (mean: 4.4)*(6)*. The numbers are substantially higher than those for sterilized persons in the U.S. (mean: 3.6, median 3.4) *(1)* and for the median (4.0) calculated for nine states in India *(2)*. The figure is lower than that reported by Siddiqi and Sadik (mean: 5) for a national sample of vasectomy records in Pakistan *(4)*.

A substantial majority (65 percent) of Gujarat acceptors were illiterate. This represents a departure from the pattern of Indian studies reviewed by Presser which showed significantly lower rates of illiteracy. The high figure, however, is comparable to limited data from Pakistan. One should note that the Gujarat acceptors are for the most part (77 percent) employed in agriculture and that their distribution among income groups is relatively even with clustering at the low end. Because Gujarat is mainly rural these findings are not unexpected. The important conclusion to be drawn is that acceptance of sterilization does take place among the illiterate, the agriculturally employed, and the poor; thus, there is apparently no minimum threshold on the three variables which must be reached before acceptance will take place.

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planning exhibitions at the sites of large camps and public meeting places. The exhibition officer, Government of India, also organized large-scale exhibitions in big cities and towns.

Family planning literature. The following family planning literature was prepared and printed on a mass scale for the campaign: a small booklet on "Common Questions and Answers on Family Planning" (2,000,000 copies); a folder on vasectomy operations "A Path of Happiness" (43,500 copies); a special poster flashing the idea of "Division of Land" as necessary in families with more children, prepared specifically for rural dwellers (20,000 copies); a folder on Nirodh (condoms) (250,000 copies).

Special Issue of Campaign Plan: A special issue of "Campaign Plan," prepared in Gujarati (the Gujarat language), was published through a voluntary organization, Gram Sahayoji Samaj. This issue was sent to all campaigners at taluka (block) and district levels.

Awards, certificates, and letters of appreciation. "Recognition is the pillar of success." This has been a guiding principle in Gujarat, which is known for its progressive outlook toward development programs. A proposal made by the Mass Education Media Wing of the State Family Planning Bureau for giving due recognition to outstanding performance by program workers and volunteers at all levels during the campaign was promptly accepted by the state government. The following awards were approved:

1. Thirty gold medals, 91 silver medals, and cash prizes for officials and nonofficials were awarded for outstanding performance. These awards ranged from a gold medal worth 1,000 rupees for the best district president in each category of districts, to 300 rupees cash for the best motivator in each category of districts, to silver medals and lower cash awards for excellence within districts.

2. Merit certificates were awarded by the state government to various categories of workers for outstanding performance and devotion to duty.

3. Letters of appreciation for leadership and efficiency were written to officials and nonofficials both before and during the campaign. With a view to infusing enthusiasm, letters of congratulation were written to various authorities during the campaign. Districts achieving 100 percent of their targets were congratulated by telegraph and requested to keep up the tempo. A number of inspiring promotional letters were written by various state authorities to coworkers and subordinates as suggested in the plan of operation for the campaign.

The key elements in the campaign can be summarized as follows: a well-defined objective; advance planning; efficient organization and management; education and motivation; mass publicity; higher incentives; active participation of government, semigovernment, and voluntary organizations; and support of top officials.

Conclusions and Recommendations

The achievement of the Gujarat campaign is remarkable by any standard and is an important landmark in the history of family planning. The campaign has helped not only to popularize vasectomy operations, but also to promote group acceptance of the small family norm.

More than 1,000 vasectomy camps were organized throughout the state. Our experience shows that small camps performing 50 to 500 vasectomies in the acceptor's home locale have considerable advantages over a massive camp performing thousands of operations. Wider coverage of both area and population is possible through multiple camps. The smaller camps bring family planning into the immediate lives of the population and function as a powerful medium for family planning education, motivation, and publicity. Diffusion of information through multiple camps is much greater than the diffusion through a single massive camp organized at the district headquarters.

Both Ernakulam and Gujarat campaigns have demonstrated that higher incentives can bring about a phenomenal increase in sterilization acceptance rates. We feel that the policy of giving higher incentives to the acceptors should be adopted immediately on a wide basis. Incentives may vary from 50 to 100 rupees depending upon the local conditions. The government should give a minimum of 50 rupees to each vasectomy acceptor and 10 rupees to the motivator for each case successfully motivated. Incentives help to minimize the gap between knowledge and practice of family planning by accelerating the process of decision making.

No effort on such a massive scale as the Gujarat campaign can succeed unless the top officials of the state government take personal interest, provide necessary encouragement, and help in mobilizing total government, semigovernment, and other resources. If the top officials of the Government of India concentrate on motivating high officials of the state governments and adopt a policy for higher incentives, then we feel that the family planning program in India will achieve success.

Special national as well as regional workshops of chief secretaries, health secretaries, and directors of state health services may be convened with the specific objective of working out the methods and action plan, with target dates for specific actions for launching a massive vasectomy campaign in each state. Gujarat State and Ernakulam have already provided models that could be modified according to local situations.

We have been late by nearly 20 years in launching intensive family planning campaigns. Had successful campaigns like Ernakulam and Gujarat been started in 1951, then we would perhaps by now have reduced the alarming problems of poverty and joblessness.

We must make up for lost time by achieving greater results in the next two to four years to accomplish the goal of bringing down the birth rate to 25 per thousand. This will be most difficult unless policy makers implement programs based on these field experiences.

Acknowledgments

We are deeply grateful to the Government of India and to the team of Government of India officials led by Shri R.N. Madhok, joint secretary for considering our proposal for higher incentives.

It is hardly possible for us to find words to express our thanks to Shri L.R. Dalal, chief secretary and Shri R.B. Shukla, health secretary to the Government of Gujarat for their valuable guidance and constant encouragements to the state and district officials and nonofficials during this campaign.

We are also sincerely thankful to district and taluka panchayat presidents and mayors of the corporations, district development officers, collectors, municipal commissioners and presidents of nagar panchayats and other officials and nonofficials of the districts who have directly or indirectly contributed to the success of this campaign. We are thankful to Shri Kaushik Desai, health education officer, for his help in preparing this report. Last but not the least, we extend our gratitude to all the vasectomized persons for their wise decision to accept the small family norm to secure a healthier and happier life.

Egypt Studies a New Plan of Action

by AZIZ BINDARY

In its studies of alternative methods of lowering fertility, the Executive Board of the Supreme Council for Family Planning in Egypt has been seeking fresh outlooks on this task. This article reports one alternative plan which we are now attempting to evaluate. It is a tentative plan, but one that warrants wider consideration because it is somewhat at variance with the typical approaches to the problem.

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Although reproductive patterns are often considered to reflect socioeconomic conditions, most attempts to change these patterns focus on provision of family planning services rather than on attempts to change the conditions of society. The findings of an Egyptian operation research group, established to evaluate long-term family planning and to identify factors affecting the fertility situation in the country, suggest that a broader, diffused approach to changing social structure might have a more lasting impact on fertility than the direct approach implied in family planning. To present this hypothesis, let us review briefly the structure and goals of present family planning programs and then present an alternative social change program that, by modernizing the status of women, would limit fertility as an indirect outcome.

Current family planning programs, governmental and nongovernmental, in Egypt and elsewhere, include the following set of actions:

- provision of family planning services
- communication and information
- training
- education
- research, including KAP studies
- statistics and evaluation
- planning, programming, implementation, and monitoring.

These programs have as their target population women or couples in the fertile age groups. Their aim is to assist and/or influence the target population to adopt the small family norm and to achieve this norm by making use of contraception. Motivation is basically carried out by means of health education.

Two types of family planning programs, sharing the above characteristics but differing in the core service unit, have developed. In the conventional family planning model, the core is any unit delivering family planning services, either integrated with other health services or an independent unit. This is the typical pattern being followed around the world. In the extended model, the core is a maternal/child health unit, which combines family planning with a range of other maternal and child health services. This model is based on the concept of reaching the target population at the point of highest motivation—presumably, the antenatal, natal, and postpartum period. This model is followed in the postpartum program of the Population Council and in the projected MCH/FP program ("Taylor/Berelson" plan).

When looking at the societies that have attempted to change fertility patterns through family planning program, we see an unclear picture. Countries such as France, facing population regression or stability, have not been successful in increasing fertility rates through influential measures. Countries such as Korea and Taiwan, in which family planning programs have been accompanied by falling fertility rates, have concurrently experienced extensive socioeconomic changes, and it is still impossible to precisely partition success in changing fertility patterns as between family planning and the new conditions. In some countries, such as Hungary, fertility has declined without the obvious influence of family planning programs (except perhaps for abortion); in others, efforts to reduce family size have had little apparent effect.

These and other examples show that there is an apparent lack of relationship between fertility and family planning activities, or at best a weak one. Our observations and studies then led us to the following judgments: (1) fertility patterns are the results and not the cause of socioeconomic structure and (2) in particular, low fertility is brought about by socioeconomic changes resulting from industrialization and urbanization.

To test these hypotheses in Egyptian society, we analyzed some 80 factors affecting the fertility situation. In the end, the analysis pointed to male dominance and female subordination as the basic causes of high fertility. The growth rate in Egypt has come down from about 2.5 percent in 1966 to possibly 1.9 percent currently. This trend is due not to family planning program activities, but rather to (1) social and economic changes over the past quarter century, such as land reform and industrialization, and (2) the effect of the war, primarily in bringing more women into the labor force. This latter element in particular, by creating a conflict between women's work and childbearing, offers potential for the socioeconomic change that would alter fertility patterns. Our objective is to capitalize on this trend.

To this end, we present a third model which we have called the social structure change model. It aims at creating conditions that will bring the target population to adopt small family norms. Whereas the core of the two family planning models is the contraceptive service unit, the core of this approach is to offer women employment as an alternative to childbearing. For such a plan to function in Egyptian society, the form of employment must have the following characteristics:

- It must fall outside the field of men's employment. This is essential, at least at the initial stage of development, because Egypt is a male dominant society and there is currently a high level of male unemployment. An example would be small sewing factories.
- The work has to be attractive to women: it must involve significant personal economic returns.
- Returns must be greater than the economic value of a child.
- The work must be nonagricultural because agricultural and domestic employment both seem to be associated with high fertility.
- It must fall between the cottage industry, which creates no conflict with fertility, and mechanization, which re-

quires greater skills and fewer working hands.

- It should involve group activity because individuals can be better motivated in a group, and training and education are thus facilitated.
- Its aims should be individual development and, ultimately, community development.

In addition to the core employment program, the model would include a number of supportive actions, as follows: provision of nutrition, sanitation hygiene, and education for children of employed women; training and adult education; delivery of family planning services; research concentrated on study of group psychology; and formulation of new means of rapid sociostructural changes contributing to low fertility. Of special importance is the detection of early signs of behavioral changes producing low fertility and immediate implementation of actions to support these gains.

The Egyptian program is now seeking to develop a few experimental demonstrations of this plan, to test its validity and impact in the field, complete with systematic evaluation.

Status and Prospects of Natural Family Planning

by STANLEY GILDER, WILLIAM URICCHIO, *and* PHILIP CORFMAN

This article reviews a three-day conference on Natural Family Planning held at Airlie House, Warrenton, Virginia, early this year under joint auspices of the Human Life Foundation and the National Institute of Child Health and Human Development. Dr. Gilder is former editor of the British Medical Journal; *Dr. Uricchio is chairman of the Biology Department at Carlow College, Pittsburgh; and Dr. Corfman is director of the Center for Population Research at NICHD. Drs. Urrichio and Corfman were organizers and cochairmen of the meeting.*

The Human Life Foundation was founded in 1968 with a grant from the American Catholic Bishops. It is an independent, self-governing, nonsectarian research foundation with primary interest in improving methods of family planning that are based on periodic abstinence. The Center for Population Research of NICHD, also founded in 1968, is the principal Federal agency with a comprehensive program for research and training in the population sciences.

At the conference, scientists from a variety of professional disciplines and cultures explored and evaluated contemporary methods of natural family planning, analyzed its scientific basis, its assets, liabilities, and effectiveness, and considered what new research should be carried out. The meeting began with fundamental scientific considerations and ranged to clinical application.

Subject matter at the recent conference included biological rhythms, the menstrual cycle, immature and aged gametes, prediction, detection and control of ovulation, psychology of natural family planning, and teaching of clients.

Biological Rhythms

Study of the menstrual cycle, understanding of which is a key to natural family planning, begins with a consideration of the complex biological rhythms detectable in all living organisms. These rhythms are of two kinds, as Dr. Frank A. Brown (Northwestern University) pointed out; there are the rhythms dependent on geophysical forces, and those that operate apart from the environment. These latter are known as circadian, circatidal, circamonthly, and circannual cycles, and their frequencies often depart slightly from geophysical ones as a consequence of a continuous and self-induced shifting of phases. These rhythms and their modifications appear early in embryonic life; the site of their registration in the nervous system remains unknown.

The field of inquiry was narrowed by Dr. Andrew Nalbandov (University of Illinois) who described the reproductive rhythms of mammals. In discussing estrus cycles, he pointed out that the restricted heat periods in nonprimates insure the union of gametes, male and female reproductive cells, during the prime of their life. One result apparently is infrequent occurrence of physical and mental defects in the offspring, in contrast to primates, which are sexually receptive for longer periods. Nalbandov advocated more comparative studies of reproductive rhythms of animals that are more akin to man in their endocrinology than the laboratory rat, studies of which he blames for much of the misunderstanding of the human reproductive process.

Domestic mammals are a better source of information. These mammals can be classified into two groups by type of reproductive cycle: macrocycles and microcycles. Macrocycles are exhibited by seasonally breeding animals, which show estrus cycles only at certain times of the year, an example being the autumn period of fertility in sheep. Microcycles are those of animals that breed at regular—for example, monthly—intervals, an example being the 21-day cycle of the rat.

The mechanism underlying reproductive cyclicity appears to operate via catecholamines, which stimulate the nuclei in the hypothalamus to secrete certain peptides (called releasing factors) which pass through veins to the pituitary. The hormones secreted by the pituitary then act on the ovary and testis and control reproductive functions. The gonads in turn secrete hormones that return to the hypothalamus and help regulate releasing-factor production.

It has been suggested that stress may induce ovulation at times other than the expected period, as some preliminary work has shown in the case of rape. The evidence seems to be equivocal, however, and many more data are needed. The possibility of induced ovulation is important to the successful practice of natural family planning and should be studied as well as other events in the reproductive cycle such as follicular growth, the process of ovulation, and corpus luteum formation and function.

The Menstrual Cycle

What makes the primate menstrual cycle cyclical? Within the cycle there are apparently two sets of closely integrated variables, hormonal and morphological. Dr. Raymond Vande Wiele (Columbia University) presented the outlines of a complicated series of equations from

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which he and his colleagues have constructed a mathematical model that simulates the changes in the cycle. His equations attempt to express in a qualitative and quantitative manner all known hormonal changes and other variations.

From computer treatment of the data several interesting features have emerged. One is that introduction of normal random variations into the model is enough to account for the occasional occurrence of anovulation, late ovulation, and other phenomena hitherto regarded as pathological. Another is that the classical feedback model does not entirely explain the cycle. Instead of the steady rise and fall in hormone levels thought to occur, a series of rapid oscillations have been revealed. The oscillations in luteinizing hormone and estrogen levels are in phase in the first half of the cycle but out of phase in the second half. It seems that an exact picture of ovarian activity is being communicated to the hypothalamus every instant, and this communication may suggest a new basis for inducing or blocking ovulation.

Some clinicians believe their women patients when they speak of having a "regular cycle", but this is a myth according to the extensive studies of Dr. Alan Treloar (National Institutes of Health), who has accumulated over many years the menstrual histories of University of Minnesota students, their daughters, some granddaughters, and more recently, Alaskan Eskimos.

Dr. Treloar's study includes a complete analysis of the menstrual histories from commencement of the menstrual cycle (menarche) to menopause. This work has established the extreme instability of the cycle in the early years after menarche and after age 40. The period between 20 and 40 years is one of relative stability, but even then there are variations enough to expose the 28-day cycle as a myth. Every woman seems to have her own cycle period, 5 percent showing periods shorter than 24 days and another 5 percent periods longer than 37 days. Shortening of the cycle occurs as women age from 20 to 40 years, but this is not uniform, nor does an individual woman have periods of equal length. There seems to be no relation of cycle length to lunar cycles, nor have any cultural or geographic (latitudinal) differences been detected; the data from Alaska are similar to those from Minnesota.

Dr. Rudolf Vollman (National Institutes of Health) summarized data from a 37-year follow-up of a relatively nonmobile Swiss population and pointed out some pitfalls in assessing matters concerned with reproduction. One technical problem is that all his evidence for ovulation is circumstantial. Age effects on basal temperature and the length of the premenstrual phase are often disregarded. Frequency of intercourse per cycle also affects results, and the effect varies with length of menstrual period. In Dr. Vollman's series, when the day of intercourse was accurately known, no pregnancy occurred more than a day after the temperature rise and none before the ninth day of the cycle.

Immature and Aged Gametes

As pointed out by Dr. Nalbandov, in most creatures, ranging from sea urchins to mammals, fertilization takes place almost immediately after the egg has been shed, so that fresh gametes are assured. The sequence of events from ovulation onward, beautifully demonstrated by Dr. Richard Blandau's (University of Washington) films, nevertheless is subject to mistiming and subsequent abnormalities.

When an ovum is fertilized later than normal, it is called aged and subsequent abnormalities in cell division may occur. As reviewed by Dr. Blandau, electron microscopy has shown that in an aging ovum the protective layer of granules under the cell membrane, which normally appear to prevent entry of a second spermatozoon into a fertilized ovum, has moved deeper into the cytoplasm or is absent, and thus polyspermy is likely to occur. In vitro studies suggest that fertilization of aging ova is associated with a larger fraction of abnormal births than with normal ova.

Both aged and immature spermatozoa also appear to be a liability—according to the work of Dr. Marie-Claire Orgebin-Crist (Vanderbilt University). In the rabbit, fertilization with either immature or aged sperm has been shown to lead to more abnormalities in the fertilized ovum, such as abnormal numbers of chromosomes, leading to death of the fetus in most instances.

The situation in man is as yet unknown, but there is a possibility that quite subtle aging changes may lead to abnormalities. If research in experimental animals can be taken as an indication, the use of natural family planning may increase the probability of fertilization with aging gametes. Coitus some time removed from ovulation may result in an increased risk of spontaneous abortion. There are also claims of an increased rate of congenital malformations among children born to parents in regions where natural family planning has been used, such as Ireland and New England.

These claims, although few, are sufficiently alarming to warrant more research into effects of fertilization with aging human gametes. There are a number of unknowns. For example, we do not know how long human sperm or ova remain viable. Figures quoted are inspired guesses, and it is likely that although sperm can remain motile for 24–28 hours they may lose their fertilizing ability earlier. Ova may remain fertilizable for only 15 to 18 hours. Recent recordings of the interval between coitus and ovulation as determined by temperature rise suggest no relation between abnormality and time interval, but temperature rise is notoriously variable as an indicator.

There is a clear need for data on a large number of pregnancies to ascertain any adverse effect of aging sperm or aging ova, and Dr. Rodrigo Guerrero (Valle University, Cali, Colombia) listed possible research projects to deal with this problem. He would like to see large-scale studies of the probability of conception and of abortion after intercourse on any given day of the menstrual cycle. There is also need for a study of the incidence of Down's syndrome (mongolism) in relation to time of intercourse.

Ovulation Prediction, Detection, and Control

For years it has been obvious that natural family planning would be greatly improved by development of a *predictor* of impending ovulation. (A new *indicator* of present or past ovulation would not advance natural family planning technology.) To be useful, a predictor would have to be simple, cheap, painless, rapid, specific, reliable, and recognizable in most women. If a test is to be of maximal use in natural family planning, it must become positive about 72 hours before ovulation. Unfortunately we are still looking for such a sign.

Dr. John R. Marshall (University of California, Los Angeles) reviewed the many attempts made to find such predictors. Tests applied to blood specimens are of limited practical value for obvious reasons. Many papers have documented studies of hormone and steroid levels, but none has proved of practical value on a large scale. Urine tests are easier from the

patient's viewpoint, but such measurements as that of pregnanediol have the disadvantage that they are difficult to carry out and so far act only as indicators. Currently under evaluation is a test for urinary xanthurenic acid, which increases at about the time of ovulation.

Tests on saliva have been proposed, particularly a new and unproven technique for measuring alkaline phosphatase on a paper strip. Cervical mucus has been the subject of several chemical tests, none of which has been successful. Another indicator that might prove useful is the measurement of skin temperature of the breast, which undergoes vascular changes that are probably estrogen dependent.

Second only to ovulation *prediction* is ovulation *control* as a means to improve natural family planning. Because many menstrual cycles are irregular, efforts have been made to regulate ovulation by administration of a variety of steroids and hormones. Clomiphene, in particular, has received much publicity because of its association with multiple births. Discussion at the conference made clear that much work must be done if ovulation control is to become a truly useful method.

Mucus Observation

A husband and wife team from Australia are enthusiastic advocates of what they call "the Ovulation Method." Drs. John and Lyn Billings (Queen Victoria Hospital, Melbourne) have trained large numbers of women to recognize the quantity and quality of cervical mucus secreted during the cycle as an indicator of fertile and infertile days. The women simply note the dryness or moisture in the genital area. Depending on the length of the cycle a number of dry days will occur after menstruation. The dryness is followed by a gradual change to a wet or sticky sensation. As the days go on, the mucus becomes thinner, clearer, stretchy, and more copious with a sensation of slipperiness at the most fertile days of the cycle. The fourth day after the peak symptom is the start of the infertile period. Although some doctors are highly skeptical of this method, most women seem to have no difficulty with it. They experience the sequential changes in the mucus and can predict ovulation satisfactorily.

Temperature Method

Since 1946 Dr. Gerhard Doering (Stadt Krankenhaus, Munich) has been teaching the temperature method of natural family planning, and he reported reasonably satisfactory results. His figures show that if the strict technique is followed (by which intercourse is restricted to the postovulation period of the cycle) the failure rate is very low. If intercourse is also permitted immediately after menstruation, the failure rate rises from 0.8 to 3.1 pregnancies per 100 women per year. Many of these pregnancies are due to patient failure and not to failure of the technique. Dr. Doering announced that after hearing the paper by the Billingses he intended to apply the Melbourne method to women with irregular cycles.

Psychology of Natural Planning

Among the generally accepted criteria for contraceptive methods, such factors as effectiveness, safety, moral acceptability, facility in teaching, and noninterference with pleasure have been frequently included. However, as Dr. Conrad Baars (Rochester, Minnesota) pointed out, there has been relatively little concern about the mental health of the couple. Although we accept the pursuit of pleasure as a goal, should we not look to family planning as an aid to the pursuit of happiness, and as an activity that makes for mental health and does not interfere with growth and maturity?

Dr. Judith M. Bardwick (University of Michigan) commented on the almost total absence in the scientific literature of psychological studies of natural family planning and of other methods as well. She emphasized that most of the writing about contraceptives is based on rational grounds and that the important and difficult irrational element tends to be overlooked. She went on to analyze in psychological terms the virtues and drawbacks of natural family planning. On the positive side it is without cost, always available, reversible, and physiologic. On the negative side, it requires close attention to the menstrual cycle, and it is not psychologically easy for women to focus attention daily on functions they often prefer to ignore. Also, natural family planning diminishes spontaneity and is associated with anxiety. It requires abstinence, and its failure may be associated with guilt. Several speakers felt that Dr. Bardwick was incorrect in linking the method with anxiety; it had been their experience in a number of countries that women were less anxious when they had been taught more about their reproductive function and its control.

A questionnaire on the psychological aspects of natural family planning was circulated among husbands and wives who were using the temperature method in England. The results, summarized by Dr. W. Michael Moore (Manchester), on behalf of Drs. John Marshall and Beverly Rowe, showed that although most husbands and wives worried while learning the method, most had ceased to worry when they grew accustomed to the practice. A substantial minority thought that worry affected their attitude towards intercourse. Most people found abstinence difficult; about one-quarter thought it had changed their relationship for the worse, and over half were more conscious of sexual feelings during periods of abstinence. Nevertheless, three-quarters of this selected sample found the method satisfactory, and most thought it had helped their marriages.

Father Francis Madigan (Xavier University, Philippines) is mainly concerned with two questions in the Philippine setting: What impact does the practice of natural family planning have on Filipino couples and on their parent-child relations, and how do these effects differ from those when contraceptive pills or IUDs are used? Two sets of answers have been derived. The positive set stresses the satisfaction of husbands at learning to control their sex drives; the negative set stresses the difficulties involved in the necessary suppression of these urges. Relations within the family are often particularly difficult in the Philippines where there is great stress on social acceptance. There are obligations to return favors, and these obligations extend to the parent-child relationship, tending to unite families. On the other hand, grudging male acceptance of natural family planning may aggravate marital disharmony.

Dr. Mary Ella Robertson (Boston College) stressed the whole social scene. She pointed out ways in which cultural factors such as social class, economic conditions, aspiration levels, and motivation influence family size, family planning, and fertility. The general shift in society has changed people's thoughts about family size, but couples approach the planning of their families in different ways. Some lay their plans well; others are simply hopeful, and some are frankly pessimistic. Middle-class Catholics are developing better patterns of communication about family planning. Effective family planning and satisfactory sex adjustment are associated with much sharing, interchangeability of roles, and ease of communication.

Teaching of Clients

Teaching techniques vary widely for natural family planning, as for other types of contraception. Techniques must be adjusted to the consumer's level of education and to the couple's environment and accessibility. Three different approaches were described by G. C. Nabors (University of Texas, Dallas), Dr. Bernard Pisani (New York University), and Dr. John McCarthy (Family Life Center, Pittsburgh).

Dr. Nabors has clients from a wide geographic area, often without ready access to a suitable clinic. He developed a correspondence course in which women are taught from material sent each month along with a quiz to test their comprehension of previous material. Dr. Pisani operates in a city area with a shifting population, receives patients only by referral, and teaches in facilities removed from the usual clinic. Telephone consultations and correspondence are included in the program. Some 2,000 women were taught over the past ten years. Dr. McCarthy's situation is somewhat different, because his teaching is an integral part of a community family life program. Under a grant from the U.S. government he has developed a program and training aids for use with clients of limited education and income.

National experience with natural family planning in a variety of countries has shown that population programs appear to develop around effective teachers. This was a central theme emerging from a session at which Drs. Francois and Michele Guy (Grenoble, France) outlined experience with people from a variety of religions in Mauritius. Father Madigan indicated that a substantial number of Filipinos have now accepted the temperature method in a program sponsored in part by the U.S. AID program. Drs. John and Lyn Billings emphasized that successful teaching of the Ovulation Method depends on a separation of instruction from that of other methods, dedication on the part of teachers, and a woman-to-woman approach in spreading the doctrine. They were particularly insistent upon independence from reliance on temperature records.

Repeated throughout these sessions was the urgent need for careful evaluation of all programs. Several speakers made a plea for a data bank in which information from all cases might be analyzed. It was further suggested that such a bank ought to include data from Canada, Europe, and other areas where natural family planning is better organized than in the United States.

There are many problems in assessing effectiveness of any contraceptive technique, as Dr. Bernard Greenberg (University of North Carolina) pointed out. Even with recent improvements in measurement, such as the life table system, bias can be introduced by various means such as the use of a training period before results are measured, thus eliminating some high-risk women. Failures are often rationalized away. For example, it may be claimed that the woman did not understand the method, but many women who do not fail also may not understand the method properly. Or it may be claimed that the woman wanted to become pregnant; the evidence for this may be after the fact.

Conclusion

During the three days of the conference, those with experience in the field demonstrated that natural family planning is a feasible method of contraception for couples with sufficient motivation and a willingness to accept a measurable risk of pregnancy. A critical block to progress is the lack of trained personnel to teach already established techniques.

On the other hand, all participants agreed that natural family planning must be improved if a significant number of new couples, both Catholic and non-Catholic, are to use it. Improvement is dependent on further research, such as careful evaluation of classic and newly developed techniques for effectiveness and psychosocial impact. Research on the human menstrual cycle with emphasis on prediction and control of ovulation is needed if entirely new techniques are to be developed. An often repeated theme of the conference was the need for psychological and sociological studies to increase the use of natural family planning, with full recognition of its strengths and weaknesses.

The Kaoshiung Study

by GEORGE P. CERNADA *and* LAURA P. LU

The Kaoshiung Study conducted between 1966 and 1968 had two purposes: to increase IUD acceptance by active use of mass media and to introduce the pill and determine its effect on IUD acceptances. The use of mass media was an innovation in Taiwan. By 1972, six years later, a moderate to intensive public information campaign using all mass media and other information channels was in effect throughout the island. The decision to initiate such a campaign was influenced by the success of the Kaoshiung study.

Mr. Cernada is resident advisor, the Population Council, Taiwan, and Miss Lu is chief, Health Education Division, Taiwan Provincial Health Department. *The former Taiwan Population Studies Center staff worked on selection of the stratified random sample from the ten districts of the city and also helped with the training of the Provincial Health Department's six village health education nurses, who conducted interviews. The nurse interviewing was supervised by two local health educators of the Kaoshiung City Health Bureau and the Southern Industrial Health Center. Coding of data was helped greatly by Mr. M. C. Chang of the survey and research unit of the Taiwan Family Planning Committee. Mr. C. H. Lin, Chief of the data processing division provided invaluable help with computer programming. Advice on the early planning was contributed by Dr. L. P. Chow and Mr. H. C. Chen and on the later analysis by Dr. Chow, Dr. T. H. Sun, Mr. F. Niu, Miss Y. Hsu, and Professor Ronald Friedman, University of Michigan.*

The primary purpose of the Kaoshiung study was to increase loop practice in Kaoshiung by more active use of mass media, extensive use of this industrial area's organizational network, and increased work input. A secondary purpose was to introduce the pill and to find out if it would adversely affect loop acceptances.

Prior to the action program, a sample survey of 1,500 wives took place in Kaoshiung City in November 1966 to establish guidelines for carrying out the program. Questions about radio listening habits, movie attendance, newspaper and magazine reading, TV viewing, and attendance at public meetings revealed that the most promising forms of mass media were radio and movies. Questions about family planning knowledge, attitudes, and practice indicated that important groups to reach were the illiterates and those not wanting more children but not practicing contraception.

The special campaign began in January 1967, using mass media, to spread information about family planning. The pill was offered to all wives in Kaoshiung, although its use in the rest of Taiwan was restricted to women who had discontinued the IUD.

A follow-up survey in May 1968 determined (a) the amount and types of exposure to family planning mass media and other public information; (b) changes in knowledge, attitudes, and practice of family planning, particularly with respect to the two program methods (the loop, and the pill); and (c) the role the campaign played in promoting change. Longer-term observation was used to determine if providing the pill to all wives who wanted it lowered the acceptances of the loop.

The general conclusions were that the campaign was successful in increasing knowledge and acceptance of family planning methods and that the availability of the pill did not decrease acceptance levels for the IUD. Subsequent decisions by the Island-wide family planning program directors to use mass media and to introduce the pill throughout the Island can in part be attributed to the success of the Kaoshiung study.

This paper focuses primarily on the use of the mass media although it should be noted that considerable effort in local organization and training also took place (for details on the program, see items *1–4* in the reference list).

Background

TAIWAN PROGRAM

The Taiwan IUD-centered program began on an Island-wide scale in 1964. It had been preceded by a family planning action-study program, which began in 1962 in Taichung City, the capital of the Province of Taiwan, and by a conventional method-oriented program which provided "pre-pregnancy health" services at 120 of Taiwan's 361 local health stations from 1959 to 1963. Since 1964 the main emphasis of the information and education program had been face-to-face communication, carried out by home-visiting family planning workers. Use of the mass media was limited by a lack of official government support for the program until May 1968, a small budget, and almost no staff. The only use of mass media prior to early 1966 was the limited distribution of news releases. The program was virtually entirely home-visitor oriented.

As it became more evident to program administrators that many key government personnel supported the family planning activities, restrictions on the use of mass media relaxed slightly. Two brief television panel shows were held in early 1966. A series of radio spot announcements (on an eight-times-daily, every two-hours basis) at one Island-wide network also began in early 1966. In April 1966, extensive family planning mailings began to women throughout Taiwan who had recently had babies. By mid-1966 a set of three slides on the loop and pill was shown before feature films in movie theaters in a few selected areas, one magazine distributed among rural agricultural workers carried a regular feature on family planning, and the distribution of news releases increased.

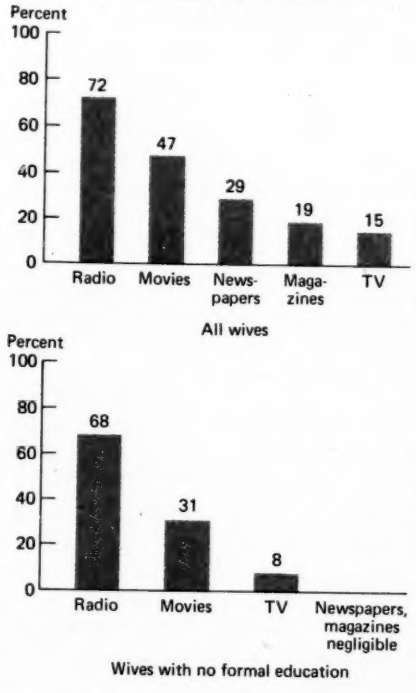
KAOSHIUNG PROGRAM

Kaoshiung, a major seaport and industrial center in the southern part of the island, is Taiwan's second most highly populated city. It had a 1967 population of 650,000. Kaoshiung's acceptance rate for the IUD, the Lippe's loop, was among the lowest of all 22 of Taiwan's jurisdictional areas. Program planners decided to make a concentrated effort emphasizing mass media to increase acceptance rates in Kaoshiung.

Preliminary Survey

The preliminary survey was carried out in Kaoshiung City in November 1966. A random stratified sample of 1,504 wives among the 620,162 mid-year 1966 population was interviewed. The reading, view-

FIGURE 1. **Percent of women aged 20–44 reached by communication channels, by education**



ing, and listening habits of the wives of childbearing age (20–44) with respect to radio, movies, TV, newspapers, and magazines were measured to determine which media should be given most emphasis in the campaign. In addition, respondents were asked about family planning knowledge, attitudes, and practices as a benchmark. The sample was quite similar in terms of parity and age, to the Island-wide Fertility Survey conducted by the Taiwan Population Studies Center in late 1965. The level of education was somewhat higher—about the same as in the urban sample of the Fertility Survey. The percent of all wives aged 20–24 was a little smaller than for the Island-wide Fertility Survey.

Exposure to Mass Media

The 1,504 wives in the survey were reached by a mean average of 1.8 mass media communication channels per person. Only 13 percent of all respondents were not reached by any of these public information channels. Their frequency of exposure to these forms of mass media was as follows:

- Radio—72 percent listened: of these 69 percent daily, 24 percent several times weekly, 7 percent less than once weekly. Seventy-nine percent of all wives owned radios.
- TV—24 percent claimed to watch: of these 43 percent daily, 18 percent once every few days, 11 percent at least once a week, 28 percent less often than once weekly. Nine percent of all wives owned TV's.
- Movies—47 percent went to movies: of these 44 percent went two to four times per month, 23 percent at least once monthly, and 33 percent less than once a month.
- Newspapers—29 percent read newspapers: of these 60 percent read daily, 25 percent at least three to four times weekly; 11 percent at least once weekly.
- Magazines—19 percent read magazines: of these 13 percent read daily, 38 percent at least weekly, 35 percent at least monthly.

As can be seen from Figure 1, radio (particularly certain stations and programs) seemed to be a likely medium for reaching women with no formal education. Magazines and newspapers were of no use, although an approach to the husbands might have had some impact since only 13 percent of husbands had no formal education compared with 40 percent of all wives. This male-oriented approach, however, was not carried out.

Exposure to Contraception

Knowledge

Of 1,504 wives interviewed, 92 percent knew of at least one contraceptive method. This was higher than the Island-wide Fertility Survey findings of 79 percent in 1965 and 86 percent in 1967. Sixty-two percent knew of the loop; 56 percent knew of the pill. Awareness of the loop was high compared to 1965's 48 percent and 1967's 62 percent found in the Island-wide Fertility Surveys. Awareness of the pill was particularly high compared to the Fertility Survey's findings of 32 percent in 1965 and 47 percent in 1967. The higher knowledge levels in Kaoshiung were expected since it is primarily a large urban area. Of those who knew of the loop, 53 percent had heard of one or more disadvantages, primarily side effects. Of those who knew the pill, 26 percent had heard of one or more disadvantages, also primarily side effects.

Sources of Knowledge

Interestingly, 24 percent of all those who knew of family planning methods cited mass media as a source. In the 1965 Island-wide Fertility Survey only 9 percent cited mass media. The discrepancy may be partially accounted for by several factors: the Kaoshiung sample is more urban and more educated; about a year elapsed between the surveys; and the Kaoshiung survey had a more specific focus on this sort of information.

Information about the pill seems to have come entirely from commercial sources since the pill was not part of the Taiwan family planning program at the time. Discussions with local pharmaceutical house staff indicated that Taipei City and, to a lesser extent, Kaoshiung City accounted for most of Taiwan's commercial sale of oral contraceptives at the time. Awareness of the pill, then, was comparatively high even before it was introduced in the family planning program in late January 1967. The Lippes loop was supplied only by the family planning program and had been available in Kaoshiung since January 1964.

Only 9 percent of those who knew of the loop cited mass media as a source, whereas 23 percent of those knowing of the pill cited mass media. Radio ads, for example, represented 12 percent of the sources of pill information as compared to less than 1 percent of loop information. Since it was known that pharmaceutical firms were doing extensive advertising for the pill, and it was clear that mass media represented a major source of pill information, the potential for increasing information on the loop was clear.

Practice

Although 41 percent of the wives had practiced a family planning method at some time, only 33 percent were currently practicing. By comparison, those in the cities in the Island-wide Fertility Surveys who were currently practicing were 32 percent in 1965 and 42 percent in 1967.

Of 1,069 wives who said they wanted no more children, 67 percent knew of the loop and 59 percent knew of the pill. Only 23 percent had ever seen the loop leaflet usually distributed by family planning home visitors and only 44 percent knew where to get the loop. More home visiting, with specific information about the loop, seemed called for.

Literacy as a Factor

Wives without formal education, as expected, knew of fewer contraceptive methods and practiced less frequently than educated wives. Since they comprised 40 percent of all wives interviewed, they were an important target group. Although 28 percent of all wives had seen a leaflet about the loop, only 15 percent of the

illiterate had. Although 40 percent of all wives knew where to have a loop inserted, only 28 percent of the illiterate did. Furthermore, only 21 percent of the illiterate were currently using a family planning method whereas 33 percent of all wives were.

Kaoshiung City Program

Following the preliminary survey, radio, movies, mailings, and selected industrial and other public organizations were harnessed to promote not only the loop but also the pill, which was introduced on 20 January 1967. The price of each cycle of pills was set at NT$10 per cycle (US$0.25) and all wives who wished it could have it (provided they had not been buying it regularly at drugstores, since the program wished to encourage new acceptors rather than supply to women already buying the pill who probably could afford the higher commercial price—approximately NT$50–60 at the time).

The additional program input included the following actions, which were not normally carried out: 50 local physicians, 15 local full-time pre-pregnancy health (PPH) field workers, 8 village health education (VHEN) nurses, and a large number of local health station and bureau staff received special orientation and training focussing on the newly-introduced pill; new PPH workers were recruited; supply depots for pills were set up at the ten district health stations and at ten other clinics (four run by industrial organizations, four military hospitals, two provincial and city hospitals); educational materials were provided to the ten health stations and ten clinics; PPH and VHEN workers held meetings for employees of 16 large factories and conducted 55 evening outdoor film showings (during six months); 1,558 letters offering free loop insertions for a limited time only were sent (from Taichung) to local Education Department employees (mainly teachers); 25,000 letters containing contraceptive information were sent to married couples working in local industry; and several hundred thousand leaflets were distributed. About 5,000 plastic packets including both maternal and child health care and family planning information were distributed through the Provincial and City Government Hospital OBGYN wards.

Prior to the preliminary survey in 1966, the family planning program in Kaoshiung consisted of 19 full-time field workers stationed at the ten district public health stations and offering only the loop. The city was plagued by a continuing field worker vacancy problem. When the campaign began there were only 14 of 19 positions filled. By April, 18 were on the job and there was an average of 17 for the remainder of the year. The increase in field workers undoubtedly helped in the increase of loop and pill acceptors (as did the work of the VHENs).

Mass media received special attention with emphasis on radio and movie theaters. Since the budget was virtually nil, the effort, of necessity, was limited. Radio was chosen because it reached the largest audience (72 percent of all respondents in the preliminary survey); this audience was composed of a larger percentage of those with no formal education (68 percent) than any other medium; those who listened did so regularly (69 percent daily) and for extended periods of time (half for more than an hour daily); it was possible to identify certain radio programs and times as highly popular (e.g., Taiwanese opera and plays in Taiwanese and also Taiwanese and Mandarin songs—the last clearly identified as popular with younger women); of those who listened, one in three said that they paid careful attention to the spot announcements. Movies were selected because 47 percent of women went to movies (two in three at least once a month, one in two, two to four times monthly); most went evenings, few during the day (since family duties kept them at home); more than half those who went noted that they paid careful attention to advertising slides shown before the feature film; 31 percent of those with no formal education attended movies.

In January 1967 radio spot announcements were placed on prime time, particularly on Taiwanese Opera and Taiwanese drama programs on two popular local stations, in addition to those already on one Island-wide radio network (beginning in early 1966). In addition, a set of three colorful slides about the loop and pill were shown daily at three shows in 28 movie theaters in the city. The content was informational rather than motivational—stressing how the contraceptive methods worked, where to get them, and their cost.

The radio announcements continued for about nine months, outdoor movie showings about six months, and movie slides only three months. The eight village health nurses who organized the effort remained less than two months. The regular field workers continued all year. The total cost of the campaign was about US$2,500, including the salaries for the village health workers as well as the public information costs.

Follow-up Survey

A follow-up survey of the wives interviewed in November 1966 was conducted 17 months later (April–May 1968). This second survey reached 75 percent of the 1966 sample. The major reason for the cases lost to follow-up was that they had moved to other areas—a common phenomenon in Kaoshiung and several other major cities (*4*). The second survey group followed much the same educational distribution as the 1966 total sample although the percent of college graduates was lower. The purpose of the survey was to determine (1) the amount and type of exposure to family planning information through mass media and other public information channels; (2) the extent of changes, if any, in knowledge, attitudes, and practice of family planning, particularly with respect to the two program methods (the loop and the pill); (3) the role, if any, the increased public information campaign played in promoting change; and (4) whether providing the pill to all wives lowered acceptances of the loop over a long period.

Exposure Through the Media

In the follow-up survey, most wives owned a radio (90 percent). Almost three times as many had TV sets (26 percent) as 17 months earlier. Movie going patterns seem not to have changed much.

The extent to which wives received family planning information through mass media was impressive. The percents of all 1,125 wives receiving family planning information by source of information are shown in Table 1.

TABLE 1. **Percent of wives reached by family planning mass media approaches**

Medium	*Percent receiving information by November 1968*	*Percent receiving information since May 1966 pre-survey*
Radio	34.8	28.7
Mailings	17.4	15.1
Newspapers	17.3	11.2
Magazines	10.4	6.2
Movies	7.7	6.4
TV	2.4	2.0

The family planning messages were related mostly to the loop, and on a lesser scale to the pill. Table 2 shows percents of women having learned of specific methods or of family planning by source of information.

Comparing the 1966 and 1968 findings is difficult since some questions asked in 1966 were revised for the 1968 survey and new questions were added. One similar question on radio, however, indicated that 25 percent of all wives had heard about family planning on the radio prior to the intensive program effort as compared with 34.8 in May 1968. Since the use of mailings to distribute family planning information did not begin until April 1966 there would have been relatively few wives who had received mailings prior to 1967—only 1.5 percent of all wives in the preliminary survey knew about family planning through these mailings, as compared with 17.4 percent in 1968.

Another interesting aspect of the dissemination of family planning messages through mass media and mailings is the extent to which information received from the media is passed on orally (see Table 3). More wives had heard from other people about family planning information in public printed media such as newspapers and magazines, and also on TV, than had seen or read it themselves. With radio, movies, and mailings more wives had seen, heard, or read of family planning information directly in the media than had had it called to their attention by other people.

It is clear from these findings that radio is an important method of reaching wives: 90 percent owned radios and 35 percent of all wives learned about family planning from this medium. (86 percent of those who heard messages about family planning on the radio heard them on the stations that were used in the campaign.) Mailings also were important—with 17 percent of all wives receiving family planning information through letters. Although newspapers and magazines reached some women, they could not reach the illiterate—40 percent of the group. The need to reach the illiterate is stressed since only 32 percent of them were currently practicing family planning compared to 42 percent of all wives.

TABLE 3. **Diffusion of information: All wives**

Medium	*Learning of family planning news in media from others*	*Percent receiving family planning news directly from media*	*Learning from both sources*
Radio	26.2	34.8	21.2
Newspapers	25.0	17.3	12.4
Magazines	11.6	10.4	7.3
Mailings	8.9	17.4	5.3
Movies	6.5	7.7	4.0
TV	2.9	2.4	1.6

Knowledge and Practice Changes

There were significant changes in knowledge and practice* over the 18 months. The percent of wives who knew at least one method of contraception, 92.5, showed no change from 1966 (92.2). This was expected since the percent was high to begin with and also since there were fewer wives in the second survey with higher education.

Knowledge of specific methods supplied by the program did rise. Knowledge of the loop rose from 62 percent to 77 percent. Knowledge of the pill rose from 58 percent to 71 percent. (To some extent, of course, the presurvey helped increase these awareness levels.) The percent of wives knowing where to get the loop increased from 40 percent to 51 percent. Of all wives, 22 percent had heard of one or more advantages of the loop and 35 percent had heard of disadvantages, compared to 15 percent and 27 percent respectively in 1966. Of all wives, 20 percent had heard of one or more advantages of the pill and 28 percent one or more disadvantages. In 1966, the comparable figures were 16 percent for advantages and 18 percent for disadvantages. "Knowledge" of a method does not necessarily mean that a wife has the information to get the method as the responses to questions shown in Table 4 indicate. The need for more specific information in any public education and information campaign was clear.

* Attitude questions, adapted from standardized KAP schedules, were considered too simplistic and hence no comparisons are made. The answers given, however, were more positive after the campaign than before.

TABLE 2. **Audience reached by mass media: 1966 and 1968**

Type of information and information source	*Preliminary survey November 1966*	*As percent of all wives*	*Follow-up survey May 1968*	*As percent of all wives*
Percent of those knowing of any method citing mass media as source	27	(24)	45	(42)
Percent of those knowing of loop citing mass media as source	9	(5)	37	(24)
Percent of those knowing of pill citing mass media as source	23	(13)	25[a]	(14)
Percent of all wives knowing of family planning through radio	—	25.2	—	34.8
Percent of all wives who received family planning mailings	—	1.5[b]	—	17.4

[a] Although mass media sources did not rise much from 1966 for the pill, 7 percent of all wives had heard about it from the PPH or public health staff compared to less than 1 percent in 1966—an indication of another aspect of the program effort.

[b] Mailings did not begin until April 1966. No commercial sources carried out mailings.

TABLE 4. **Specific knowledge of loop and pill: All wives 1966 and 1968**

Item	*Percent answering yes* 1968	1966
Knew of the loop[a]	77	62
Knew of the pill[a]	71	58
Do you know where to have a loop inserted?	51	40
Do you know how much it costs?	50	*
Do you know where to get pills?	40	*

* = Not asked in 1966 survey.

[a] A generalized question about contraceptive methods was asked and the interviewer used a checklist to mark methods the woman mentioned.

Sources of Knowledge

In 1966 only 24.1 percent cited mass media as a source of information on contraceptive methods. (There were 2,593 sources cited among the 1,035 people who knew about a family planning method or methods, or 2.5 sources per person know-

ing a method.) After the increased program effort, 41.7 percent of all wives cited mass media. Thirty-seven percent of all those who knew of the loop cited mass media as a source of the information as compared to 9 percent in 1966. Twenty-five percent of all those who knew of the pill cited mass media as a source as compared to 23 percent in 1966. It is clear that during this short period mass media played a considerable role in bringing knowledge of the loop to a higher level than the pill enjoyed 17 months before. The gain in pill knowledge seems attributable more to the field workers, who were cited by 7 percent of all wives as a source of information on the pill in 1968, as compared to less than 1 percent in 1966.

In two questions added to the 1968 survey, wives who had ever practiced contraception were asked if they had told acquaintances about methods and, if so, if the acquaintances tried the methods. Seventy-six percent never knew any method or never told anyone about any method. Twenty-four percent told somebody about method. Of these, 16 percent (two out of three) said the acquaintance tried the method; 3 percent said the acquaintance didn't try the method; and 5 percent were not sure.

Of the 24.5 percent who told others about family planning information they had received, 16.3 percent (two-thirds) told neighbors, 12.3 percent friends, 3.0 percent husbands, 0.9 percent sisters, and 0.3 percent each, mothers, mothers-in-law, and sisters-in-law.

The percent of wives having heard about loop or pill by source of information is shown in Figures 2 and 3.

Contraceptive Practice

Current practice of family planning methods rose from 33 percent in 1966 to

FIGURE 2. **All wives by percent knowing of loop by source of information: 1966 and 1968**

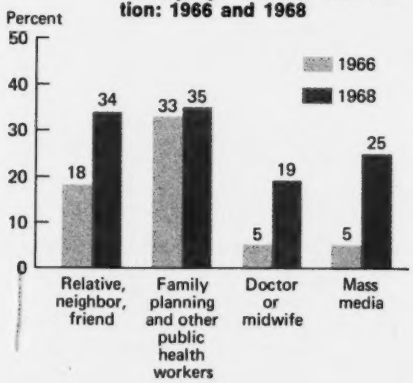
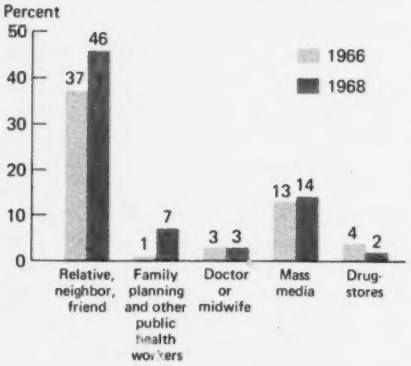


FIGURE 3. **All wives by percent knowing of pill by source of information: 1966 and 1968**



42 percent in 1968 in the sample survey. Those who had ever practiced rose from 41 percent to 49 percent. These figures were higher than those in the Island-wide KAP survey in October 1967 (42 percent ever; 34 percent currently) and only slightly lower than for the March 1970 Island-wide KAP survey (55 percent ever; 44 percent currently). Of course, the time between preliminary and follow-up surveys includes one to two months prior to the program activity and at least five months after the termination of program actions; thus, any changes observed between the two surveys cannot be attributed solely to program activity.

Of the 464 (41 percent of all wives) currently using contraceptive methods, 323 were continuing a method used at the time of the preliminary survey. Sixty-seven (6 percent of all wives) had begun practicing for the first time and 74 (7 percent of all wives) had switched to other methods. Distribution by method of the 67 who began practice after the start of the campaign was loop, 23; pill, 9; Ota ring, 24; tubal ligation, 5; and other, 13. Of the 74 who changed methods, 8 changed to the loop, 26 to the Ota ring, 11 to the pill, 8 to tubal ligation, and 21 to other methods. When the 1,125 wives in the preliminary survey are matched with the same wives in the 1968 post-survey, the results shown in Table 5 are obtained. Since interviewers indicated that some wives who had IUDs inserted had difficulty distinguishing between loops and Ota rings, it is possible that some of the Ota ring increase may actually be loop insertions. Also, most physicians involved in inserting devices were able to insert either device and since they could charge more for the Ota ring, they may have convinced women to have the Ota ring rather than the loop.

The number of contraceptive acceptors in the overall Kaoshiung program directly related to the two program methods, the loop and the pill, increased significantly from 1967 onward. The average monthly number of loop acceptances (Table 6) rose by 16.4 percent from 1966's total—compared with a rise of only 8.8 percent on an Island-wide basis from 1966 to 1967. Since the rise from 1965 to 1966 in Kaoshiung was less than half the Island-wide rise, the 1967 results seem even more impressive (despite the lack of a matching control group). Adding to this the 405 average monthly pill acceptors (from February through December 1967) strengthens the case for significant results achieved.

TABLE 5. **Percent of wives currently practicing contraception by method* 1966 and 1968**

Method	*1966*	*1968*
Loop	5.6	6.1
Pill	2.2	3.6
Ota ring	10.0	13.5
Tubal ligation	7.7	8.5
Other	7.9	9.8
All methods	33.4	41.5

*Matched cases.

Thirty-four percent of those currently using the loop in the sample survey cited mass media as one source of information about the method in 1968 as compared to only 8 percent in 1966. Of those currently using the pill, 25 percent cited mass media as one source of information about the method—less than the 39 percent found in 1966. But the number of pill users in 1966 (only 31 among 1,504 wives) was insignificant, and comparison with 1968 is difficult.

Importantly, 28 percent of the 42 percent (two-thirds) of all wives who recalled being exposed to mass media messages indicated that they learned something

TABLE 6. **Kaoshiung City and Taiwan Area: Average monthly loop acceptances by year**

	Loop acceptors			*Percent change*	
	1965	*1966*	*1967*	*1966–1965*	*1967–1966*
Kaoshiung	345	374	434	+ 5.7	+16.4
Taiwan Area	8,261	9,270	10,045	+12.2	+ 8.8

TABLE 7. **Average monthly loop acceptors: 1965–1969**

	1965	1966	Percent increase 1965–1966	1967	Percent increase 1966–1967	1968	Percent increase 1967–1968	1969	Percent increase 1968–1969
Taiwan Area	8,261	9,270	+12.2	10,045	+ 8.8	10,306	+ 2.6	10,863	+ 5.4
Kaoshiung City	354	374	+ 5.7	434	+16.4	468	+ 7.8	570	+21.8
Tainan County	536	729	+36.0	742	+ 1.8	729	− 1.8	715	− 1.9

they had not known before. Fifteen percent of all wives said that the information helped them decide to try using a method.

Pill Versus Loop

When pills were provided to all wives who wished them, there was little or no effect on loop acceptances. This finding was instrumental in broadening the Taiwan program since it helped program administrators decide in late 1970 to provide the pill on an Island-wide basis to any wife who wanted it.

How do we *know* that pill acceptances do not hurt loop acceptances? First, prior to the introduction of the pill, in 1966 the average monthly loop acceptances were 374; in 1967 the average rose to 434; in 1968, to 468; in 1969, to 570. Thus, loop acceptances rose by 16.4 percent after the pill program began in early 1967. At the same time, average monthly pill acceptances in the program went from 405 monthly in 1967 to 252 in 1968 and 113 in 1969. There was a definite annual rise in loop acceptors; whereas the number of pill acceptors reached a peak the first year they were available and displayed a downward trend thereafter. When the rate of average monthly loop acceptances in Kaoshiung is matched with the Island-wide program, the rate of increase in loop acceptances, which was below the Island-wide increase prior to the special Kaoshiung program (1965 and 1966), surpassed it thereafter (see Table 7). These findings clearly indicate that the pill did not lower loop acceptance rates.

Reinforcing the point, the results from Tainan County, an adjoining rural area, showed that providing the pill to all wives who wish it was not likely to affect loop returns significantly, even in a non-urban area where no special additional program input was carried out. Tainan County did not keep pace with the Island-wide increase in loop acceptances during 1967 before the pill was offered to all wives. When the pill was offered on a wide scale in January 1968, loop acceptances decreased slightly. However, the monthly average of pill acceptors rose from 117 in 1967 to 363 in 1968.

Summary of Results

- Efforts to use public information approaches more extensively broadened staff experience in producing public information materials, identifying audiences, budgeting for, and dealing with mass media agencies, and in organizing a concentrated effort, particularly with existing organizations other than public health (factories, unions, industrial clinics, and so on). The need for an information/education section became clear, and staff were drawn from the project to establish one.

- The family planning program for the first time acquired information on who listened to the radio, read newspapers or magazines, attended movies, and owned a TV, and what programs were popular. These findings served as the basis for planning wiser use of public information expenditures. They also served as leverage to gain more public information funding, particularly for radio, from outside agencies and later from local sources.

- It became clear that public information channels, particularly mass media, can get family planning messages to wives at a comparatively low cost. This finding helped get the Island-wide mass media campaign started in 1968.

- Providing pills to all who wanted them in the Kaoshiung Study seems not to have affected loop referrals. The Island-wide program had refrained from giving the pill to all wives who wanted it because of the expectation that it would lower loop acceptances. In late 1970, partly due to the Kaoshiung findings, the pill was made available to all women who wanted it.

- Administrators became more aware of the need to have the evaluation staff routinely gather information on mass media and public information channels. A series of questions based on and expanded from the Kaoshiung surveys was added to the Economic Correlates survey of husbands (1969), to KAP III (1970) and to the KAP survey of younger women (1971).

- Although 39 percent of all wives in the 1966 survey were illiterate, only 11 percent of husbands were. Although illiterate wives might not be reached by newspapers, their husbands might be. The 1969 Economics Correlates Survey (Island-wide) showed that 38 percent of husbands read the newspapers daily. This finding deserves more future consideration.

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NOTE ON STERILIZATION

Subject: Luke Lee "Law and Family Planning," *Studies in Family Planning* volume 2, number 4 (April 1971)

The Luke Lee article may have misled readers on two points: the acceptability of sterilization in Islamic cultures and its legality in the United States.

With respect to the former point, Mr. Lee states "[Sterilization] is unacceptable to Islamic cultures at present, but has met with success in non-Muslim Asian communities" (p. 87). Nevertheless, vasectomy programs have been successfully carried out in Bangladesh, formerly East Pakistan.

With respect to the legality of sterilization in the United States, Dr. Lee states "In the United States, 28 states have laws on sterilization. Of these, 26 permit compulsory sterilization to be performed on mentally infirm persons maintained at state institutions, while only five states allow voluntary sterilization on therapeutic or socioeconomic grounds" (p. 87). Voluntary sterilization is not prohibited by any state law. (There is no federal law dealing with voluntary sterilization.) One state, Utah, limits the grounds for performance of the operation to "medical necessity." Four states, North Carolina, Georgia, Virginia, and Tennessee have laws that establish procedures for physicians to follow. Two more states, Colorado and New Mexico have affirmative laws that are less detailed as to procedures, but that make it clear that voluntary sterilization is not only legal but consistent with public policy and not to be arbitrarily restricted by hospital regulations.

Greater obstructions to the availability of voluntary sterilization in the United States lie in the requirements various hospitals impose on eligibility and in the climate of uncertainty in medical circles about the legality of the operation in the absence of specific laws.

We are indebted to Donald Higgins, director, public relations, the Association for Voluntary Sterilization for calling our attention to these matters.

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